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THE ROENTGEN DIAGNOSIS OF LESIONS OF THE THORAX

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ALTHOUGH the roentgen ray has been used in the diagnosis of thoracic lesions almost since its discovery, it was not until improvement in technique made possible short exposures in the making of roentgenograms that much progress was made. The early work relied almost entirely upon the fluoroscopic examination, and Crane (15) was one of the first to publish a comprehensive article on the value of this method in this country. In 1899 Rieder and Rosenthal (57) reported the making of chest plates in one second or less with the aid of intensifying screens. Three years later Hulst exhibited plates at the annual meeting of the American Roentgen Ray Society made with like speed, with and without the use of intensifying screens. Not long afterward, stereoscopic exposures were produced which marked a distinct advance in the usefulness of the rays in pulmonary disease. Since then most of the progress made has been in the field of interpretation, which even now is far from perfect or exact, and furnishes the main hope for future development.

In this review special stress will be laid on lesions of particular interest to the surgeon. Consideration will be given to foreign bodies introduced by external violence and aspiration, lesions of the wall structures, lungs and pleura, mediastinal contents and diaphragm.

The present war has brought forth a voluminous literature on the localization of foreign bodies, much of which is applicable to the chest, for here it is obviously impracticable to use the simple two-way right angle method of localization. The stereoscopic method, though valuable, has a limited field of usefulness, because of the time, work and expense incurred to make it available. The requisites (22) of a practical method are:

1. The apparatus needed must be simple, have few parts and these not likely to be mislaid.
2. Their operation should not involve reading fine scales, making numerical computations or drawing diagrams requiring fine measurement.
3. The measurement of small lengths should not be required.
4. The required manipulation of the patient should be minimum.
5. The delay incident to the development of a photographic plate or film must be avoided, except where need of a permanent record is imperative.
6. A minimum number of steps in the process is essential both for speed and to avoid undue fatigue of the operator.
7. Methods should, when desired, be capable of use at the operating table.

Most of the methods in use are modifications of the triangulation method described by McKenzie Davidson (16) consisting essentially of the taking of two roentgenograms with a known distance of tube from plate, shifting the tube a known distance and then reconstructing the lines of the X-ray by a special apparatus or determining distances by mathematical computations. Thus Holland (34) uses a table of distances, Oram (51) a diagram, Blaine (10) a Fuerstenau caliper, and Cole (14) special calipers. Hampson's (29) method permits of direct readings on a scale during the fluoro-

scopic examination. Jordan (38), Straw (65) and Young (68) use the parallax fluoroscopic method whereby the depth is ascertained by adjusting an outside body so that it moves at the same rate of speed on the screen as the foreign body in the tissues. Sutton (61), Hammesfahr (28), Barclay (2) and Villeon (4) pass instruments directly to the foreign body under guidance of the fluoroscopic screen.

After the determination of the location, the question of removal depends largely on the judgment of individual surgeons. Moynihan (50) states: "We may say with confidence that a rifle bullet or a small piece of shell casing may be retained for months or years without causing distress and without affecting appreciably the normal function of the lung in which it lies buried. But with large or irregular pieces of shell the case is different." Results thus far have led him to believe "that it is probably a safer as it is certainly a speedier proceeding to submit all patients in whose lungs a large projectile is retained to operation rather than to leave them untreated."

The roentgen ray can give much information relative to foreign bodies which may have been aspirated into the lung. Childs (13) says:

1. An X-ray examination should be made in every case of suspected foreign body in the respiratory tract, and the foreign body, if present, should be accurately located before any effort is made to remove it. After the foreign body has been located, its removal should be attempted by a skilled bronchoscopist as soon as possible.

2. A foreign body in the respiratory tract may be displaced by the deep breathing incident to anæsthesia, so if, at the time of operation, the foreign body is not found at the place where it has been previously located, another X-ray examination should show its new position before further exploration is made, or before the operation is abandoned, provided the condition of the patient justifies either of these procedures.

3. A foreign body which does not cast a shadow upon the X-ray plate can be accurately located by careful study of the secondary changes in the lung, incident to the presence of the foreign body.

Beck (5) uses the stereoscopic method of localization and states that during the eight years he has used it he has not failed to locate a single body. Grier (27) states that "because of lack of control over the majority of foreign body cases, we have not found stereoscopy to be of much value, but prefer two views made at right angles to each other (anterior and lateral) with the shortest possible exposure. The lateral view is especially valuable, as the inclination of the foreign body forward or backward often indicates the particular bronchus in which it is located. In cases in which the foreign body cannot be found by the bronchoscopist, roentgenography with the bronchoscope in position may be helpful."

After localization Ingals and Friedberg (37) have found the roentgen ray of value in directing the bronchoscopist to find it under guidance of the fluoroscopic screen. Grier (27) believes that "fluoroscopic bronchoscopy is only indicated in those cases where the foreign body cannot be located by visual bronchoscopy. When the foreign body is located in a bronchus or other structure which is inaccessible to the bronchoscope, a forceps can be projected beyond the end of the bronchoscope and the foreign body grasped and removed under the direction of the fluoroscopist. To do this satisfactorily, we believe the fluoroscopy should be carried on in two planes at right angles to each other."

In connection with foreign bodies about whose location there is doubt as to whether they are in the œsophagus or air passages, Grier (26) quotes Jackson to the effect that foreign bodies more or less flat whose plane corresponds to the lateral plane of the body are as a rule in the œsophagus. In the larynx and upper trachea flat bodies are almost invariably located with their greater plane sagittally. Foreign bodies of only very slight density in the œsophagus may sometimes be discovered by the stopping of a swallowed bismuth-filled capsule.

Regarding the bony structures of the parietes of the thorax, very little of importance has been added within recent years. Fracture and the various bone diseases can of course be demonstrated with comparative ease. Beck (6) lays stress on the value of injecting sinuses with his bismuth paste and making stereoscopic examinations to determine the location of possible lesions of bone which may have been overlooked. Bythell (12) calls attention to the rounded shadow bulging on both sides of the middle line associated with Pott's disease of the dorsal vertebræ and indicating a spinal abscess.

The recognition by the roentgen ray of gas infection of the soft tissues following injury by bullet or shrapnel is one of the developments from the battlefields. Davis (17) states that "in all cases in which the roentgen ray has shown a 'halo-like' shadow about the missile, we have found clinically, at the operating table and in the laboratory, evidence of an infection caused by gas- and pus-forming organisms. When this is discovered while examining a patient to locate a

missile, it is considered an indication for urgent surgical interference." Berry (7) describes two types of gas infection from the roentgenologic standpoint, one in which there are a comparatively small number of discrete bubbles, the other with extensive and diffuse gas infiltration. Savill (58) warns against errors from loss of tissues, ecchymoses, and abscesses around missiles producing similar pictures. To this might possibly be added surgical emphysema resulting from perforation of the lung by a splinter from a fractured rib.

In the diagnosis of pulmonary diseases, acute conditions only exceptionally give sufficient additional information to warrant the roentgen examination. Moore (47) states that "bronchitis gives a fine string-like shadow radiating outward from the hilum without reaching the periphery of the chest and varying in density according to the congestion present." In the bronchopneumonia of adults, according to Manges (44), "the roentgen rays are of little value unless the areas of infiltration are so large and numerous that they have coalesced into large patches. The small scattered foci of the ordinary bronchopneumonia are often too small to produce distinct shadows." Bythell (12) declares "there is no intrinsic peculiarity in the appearance of the mottling (in bronchopneumonia) to distinguish it from that of tuberculosis consolidations." Acute lobar pneumonia casts a distinct shadow described by Stewart (63) as follows: "The shadows cast by a pneumonic process usually commence at the cortex of the lung; in the early stage, being limited to one lobe, the most common is the middle right. The consolidation is generally wedge-shaped in appearance, with the base at the pleural surface and the apex toward the root; it spreads laterally and inward toward the root until finally the entire lobe is involved. There may be an extension into other portions of the lung, but even this extension usually spreads in the same manner as the original lesion.

"Root pneumonia assumes a somewhat different course. The consolidation appears as a dense, fan-shaped shadow spreading toward the periphery, the outer edge being very irregular. It extends from the hilus outward, involving more than one lobe; many cases do not reach the cortex."

Manges (44) states that the focus of infiltration may be localized by the roentgen ray long before there are any physical signs to indicate the process. According to him, "the indications for the use of the X-ray in the early stages, before the diagnosis can be made by the physical signs, exists in patients with unexplained fevers; or it may arise in the later stages when one suspects complications such as pleural effusion, empyema, interlobar abscess and abscess or gangrene of the lung."

An abscess of the lung can be easily recognized with the aid of the roentgen ray, according to Pirie (56) if it is partly filled with pus and partly with gas. He emphasizes the point that the erect position is necessary for detection and that the horizontal ray must pass through the upper level of the fluid. Pfahlef (54) states that "an abscess is recognized primarily by the evidence of a cavity which has been formed. This cavity is usually surrounded by an area of dense tissue, resulting from the associated inflammatory process, and at times we may recognize the level of a fluid which has collected in this abscess." In gangrene of the lung, he believes there is found less definite cavity formation and more extensive consolidation. Manges (44) describes the gangrene shadow as more diffuse and less definitely contoured than abscess. Chronic lung abscess may be the final condition of untreated cases with foreign bodies (Green and Le Wald, 25).

Regarding bronchiectasis, Moore (48) classifies it from the roentgenologic standpoint into three classes: the infiltrative, the cylindrical and the sacculated. "The first type appears as a more or less stringy increase in density along the course of the bronchi, usually localized in the lower pulmonary lobes and radiating outward from the hilus to the periphery of the chest and extending into the costophrenic angle." In the cylindrical type, "there is the characteristic mottled increase in density, extending outward along the course of the bronchi, producing a more or less fan-shaped shadow. The density is usually greatest near the hilus and distributed throughout this density one or more small areas of diminished density may be located." The pseudo-cavitations are practically pathognomonic of the condition. "The third type is characterized by the localization of distinct pseudo-cavitations surrounded by dense fibrous tissue. It may be so dense and the cavitations so filled with secretion that the shadow in the roentgenogram is almost homogeneous and the diagnosis difficult. However, the true condition is usually revealed by emptying the cavities." Pfahler (54) states that inasmuch as the disease is now being attacked surgically, before the surgeon can operate intelligently the exact situation and extent of the disease must be determined. It may consist of a single isolated large cavity or of myriads of small cavities connected with the bronchial tree. It involves the trachea, the lower portion of the lungs and particularly

the inner part of the lower bronchial tree. The cavities are distributed in line with the bronchi and for this examination stereoscopic examination is found especially valuable. Bronchiectasis may be associated with a foreign body, and this constitutes another reason for routine roentgen examination in this condition.

Regarding the diagnosis of tuberculosis with the roentgen ray, much has been written. Bythell (12) says: "In no other branch of roentgenology is it so necessary to combine the X-ray and clinical evidence as in the diagnosis of early hilus tuberculosis in children. The most frequent seat of origin of pulmonary tuberculosis in children is at the root of one or both lungs, and in the author's experience this holds good in practically every case. Ill-defined mottling extending into the lung substance, where normally there should be nothing visible except the fine streaky shadows radiating from the hilus, indicates a hilus peribronchial tuberculosis. The distinguishing features between old and recent foci are the opacity and sharp definition of the former as contrasted with the softer and less opaque mottling caused by active disease." Giffin and Sheldon (23) state that "the X-ray has been the means by which the time of onset, the location, the extension, in a word, the entire course following a primary infection of tuberculosis in children has been studied." Further:

1. That practically every case of pulmonary tuberculosis with tubercle bacilli in the sputum can be diagnosed independently by the roentgenologist.

2. That in almost all of those cases in which a radiologic diagnosis was positive when the sputum was negative, a review of the histories has corroborated the roentgen findings.

3. That there is a considerable number of patients in whom a diagnosis seems entirely impossible by clinical methods, although the roentgenologist reports positive findings. These include so-called early cases, healed cases, and diffuse tuberculosis.

4. It would seem that a careful study of stereoscopic plates of the chest will show evidences of tuberculosis as early as one can at present be positive of its existence by any other method.

5. That a keener sense of perception is developed through the visualization of lesions, and that roentgenology has been a stimulus to physicians in perfecting their skill in physical diagnosis.

6. That the information obtained from the negative report of a skillful roentgenologist may be of very great assistance in general medical and surgical diagnosis.

7. Finally, it should be emphasized that trustworthy conclusions can be drawn only by one who has had a considerable experience in the reading of stereoscopic plates. The roentgenologist, not the radiogram, makes the diagnosis.

Dunham (18) has attempted to correlate the pathology of pulmonary tuberculosis with the roentgen findings. He (19), Bissell (8, 9), Pancoast (53), Hulst (36), and many others have reported in detail the findings of different types and different stages of the disease. Sewall and Childs (59) endeavored to compare the physical signs and roentgen pictures of the chest in early stages of tuberculosis. Dunham and Rockhill (20) used the roentgen ray as a safeguard in conjunction with the application of therapeutic pneumothorax. With its aid they were able "to select cases, to watch the progress of the disease, to determine the extent of the lung collapse, to note the pressure on the heart and mediastinum, to exclude pleural effusion and to safeguard the unfilled side." Hirsch (32) has furnished a similar contribution.

Syphilis of the lung gives fairly definite findings, but these are far from pathognomonic. Bauch (3) describes two cases in which the main changes were diffuse peribronchial infiltration most marked at and around the hilum. Manges (44) states: "Syphilitic tumors usually show massive homogeneous shadows and are most commonly at the base, less frequently at the hilus. It is erroneous, however, to assume, as is usually done, that gummata are always at the base, since they may occasionally occur in the upper lobe."

Actinomycosis may involve the lungs by direct extension from an external lesion or be primarily an intrapulmonary condition. Ledoux-Lebard (40) report three cases, stating that the findings in the primary case were those of a pulmonary abscess and signs of sclerosis of pulmonary and bronchial tissue. Ecchinococcus disease of the lungs shows itself as a definite rounded tumor mass usually sharply outlined by the surrounding normal lung (Albers-Schoenberg, 1; Mollow, 46; and Weber, 67). Wadsack (66) describes a case in which the cyst contents were coughed up, leaving the capsule clearly visible. Pneumonoconiosis produces a diffuse mottling, usually spread evenly throughout both lungs. Entin (21) summarized his findings in these cases as resembling miliary tuberculosis except that the spots are larger and less sharp. Boardman (11) describes another type characterized by diffuse and uniform thickening of the linear markings and trunks of the bronchial tree.

Tumors of the lung are practically all malig-

nant. They may be primary or secondary. Moore (47) divides primary malignancies into three classes: (a) the infiltrative type which is characterized by a massive infiltration at the hilum and is usually unilateral; (b) the miliary form showing multiple discrete areas of consolidation scattered through both lungs; (c) the mixed types having some of the findings each of the other. He differentiates these tumors from inflammatory lesions by the absence of an area of inflammation around them and lack of cavitation or pseudocavitation in them. Secondary or metastatic malignancies are far more common than primary ones. Moore (49) reaches the following conclusions regarding them:

1. Pulmonary metastatic malignancy is not an uncommon condition and may occur regardless of the seat of primary focus.

2. Pulmonary metastasis bears no relationship to the extent or duration of the primary focus.

3. The clinical picture in a majority of these cases is very definite, neither the subjective nor the objective manifestations being characteristic of the condition.

4. Metastatic pulmonary malignancy is a definite roentgenographic entity, appearing in the roentgenogram as clear-cut circumscribed areas of increased density.

5. In many instances the diagnosis can be established only by the roentgenogram. By routine roentgenographic examination of the thorax many patients suffering from malignancy will be saved from useless and unwarranted surgery.

Pfahler (54) says that "their surgical importance consists in their recognition for the purpose of avoiding extensive operation elsewhere in the body when this complication exists. This is particularly true in sarcoma, and sarcomata of the lung give a very characteristic appearance, in that they consist for the most part of round or spherical tumors, which may be single or multiple, but are generally scattered through the lung tissue. This evidence of involvement of the lung by metastasis from tumors anywhere in the body usually consists in localized consolidation in the lungs, and the consolidations do not occupy by preference the usual sites of tuberculous disease, though in other respects carcinoma sometimes gives an appearance almost identical with that found in tuberculosis." Lilienthal (42) states: "No limb should be amputated for sarcoma, no hypernephromatous kidney should be extirpated without roentgenologic information about the condition of the lungs. If the characteristic circular discs of opacity are present it indicates a state in which palliation alone is justifiable." Hodgkin's disease, according to Manges (44), also gives sharply defined round shadows in the lungs, and the discovery of their presence may clear up an unexplained fever.

In pleural complications the roentgen ray furnishes most valuable information both as to diagnosis and treatment. A simple pleural thickening usually causes a diffuse increased density through which the normal lung markings are visible. At times it may be sufficiently marked to simulate fluid but lacks the well-defined limits of such accumulations. Regarding the findings with pleural effusions, Stewart (63) writes: "The character of the shadows cast by fluid in the pleural cavity depends entirely on the quantity and the presence or absence of pleuritic adhesions. The most common finding in a simple pleural effusion of moderate amount is a dense shadow occupying the entire chest on the involved side and extending upward from the diaphragmatic line with a cup-shaped, irregular upper surface. The size of this shadow depends, of course, on the quantity of fluid present. In children, however, even without adhesions, we may have a clear area of lung structure between the fluid and the root down to the diaphragm. This is especially so in beginning effusions where the shadow of the fluid seems to extend upward on the parietal pleura, before overshadowing the lung markings at the base. As the pleural cavity fills, and it usually fills rapidly in children, the distinctive cup-shaped upper border gradually disappears until finally the entire side is occupied by a dense cloud of a consistent character which completely overshadows the entire lung. This is usually associated with some displacement of the mediastinal contents to the opposite side, although this result occurs much more frequently in adults than in children.

"If adhesions are present, the effusion may become encapsulated, in which cases the dense shadow cast by the fluid usually appears as a globular mass encroaching upon the lung structure from the cortex toward the root, the base of this shadow conforming to the shape of the chest. This sacculation may occur high up or at the base; or it may be anterior or posterior."

Pfahler (54) believes that empyema generally gives a denser shadow than does an ordinary serous effusion. Exudates associated with pneumonic changes in the lung may be difficult to diagnosticate on account of the multiplicity of the shadows. Manges (44) states that "interlobar exudates produce 'hanging shadows' which extend along the fissure line from the hilus toward the

lateral thoracic wall." He also calls attention to the fact that change in the fluid level with change in the position of the patient takes place much more slowly than is generally assumed unless air is present in the pleural cavity. Information derived from the roentgen examination in empyema may not only determine the site for operation, but its nature as well. Lilienthal (42) states: "For the last two years I have been developing the operation for empyema of the thorax along the lines of rational surgery. Instead of contenting myself with the old-fashioned and non-progressive routine rib resection with its 20 per cent or more of secondary thoracoplastic operations, I do not, as a rule, resect in general empyema, but make a long intercostal incision, spreading the ribs wide apart, exploring the entire pleural sac and shaping the operation to fit the case. I do this operation either in one stage or, when the patient's condition is too critical, in two stages, the first step being merely a minor intercostal thoracotomy for immediate relief. The major, or second step, some days later, is again preceded by a radiographic examination. But in encysted or sacculated empyema it is possible to avoid entering the free cavity. The problem is a different one, merely the drainage of the pus collection without general exploration. With the aid of X-rays the exact localization of the pus is possible and the intercostal method of operating is contraindicated. Instead, we resect two or more ribs, usually together with the periosteum, and opening the cavity, treat it as an abscess, first packing with gauze, later draining as necessity arises. This selective surgery replacing the blind thoracotomy so generally practiced would be quite impossible without the guidance of the radiogram. Several times I have seen an encapsulated empyema mistaken by an expert diagnostician for a general one. By the use of the X-ray the encapsulation was established and a smaller and less dangerous operation substituted for a greater and more perilous one."

In regard to pleural tumors, Pfahler (54) says: "These may be primary or secondary, but are generally secondary to carcinoma of the breast. This cancerous involvement is usually associated with fluid, and is often difficult to differentiate from fluid due to other causes." Manges (44) states that in nearly every instance they have massive effusions which constitute the only X-ray finding.

Pneumothorax can be readily diagnosticated by its increased radiability and absence of any of the characteristic lung markings. If fluid is present at the same time, it moves very freely. According to Manges (44), "small pneumothoraces are not infrequently found on X-ray examination where one has little or no reason to expect them. In the past few years I have observed this eight times. These small localized air shadows are usually found near the mediastinum and were not associated with any displacement of the thoracic viscera."

The same author declares that the development of adhesions and involvement of the diaphragm can only be determined by X-rays. Lange (39) states that "adhesions do form and alter the shape and restrict the movements of the diaphragm and may be optically demonstrated. Pleural adhesions will gravitate into the costophrenic angles and obliterate them." Mace (43) reported a number of cases in which the X-ray revealed an adhesive diaphragmatic pleurisy with symptoms resembling gastric ulcer. The position and shape of the diaphragm may serve as an indication of lesions in the thorax or abdomen. "Some alteration in the phrenic level is a very constant accompaniment of intrathoracic tumors." (Lange, 39). In phrenic paralysis, the diaphragm stands at a high level and rises during inspiration and falls during expiration. Eventration of the diaphragm can be easily shown with the aid of the roentgen ray, especially if the stomach or colon are filled with bismuth (Stein, 62). Likewise diaphragmatic hernia can be thus shown; cases have been reported by Grandy (24) and McCleave (45). Subphrenic abscess may be differentiated from possible thoracic lesions by noting the high position of the diaphragm with a normal lung above it, and if gas be present, there is a clear shadow immediately below the diaphragm (Pfahler, 55).

Regarding bronchial glands, Overend (52) divides them into three groups: (a) tracheobronchial; when these are diseased, a shadow is seen outside and parallel with the sternum, occupying the second, third, and fourth posterior interspaces. For diagnosis, its intimate relation with the trachea and extrapulmonary bronchus is decisive; (b) bifurcation glands; these are practically invisible except in the oblique picture. For a positive diagnosis, the two limbs of the bifurcation must be discernible with the shadows in close connection with one or both; (c) hilum glands; an increased hilum opacity may be irregular in outline and contain deeper shadows within it. If the appearance is one of diffuse cloudiness with faint external margins, merging gradually into the pulmonary fields, activity is present.

Mediastinal tumors, according to Pfahler (54), are important as a surgical complication "be-

cause it is often necessary for the surgeon to decide whether the tumor which he is about to remove from some external organ, such as the breast, the thyroid in connection with goiter, sarcoma of the cervical glands, etc., may also have invaded the mediastinum. In some instances, even a primary tumor may be taken into consideration for surgical removal." The roentgen ray can offer definite information regarding the nature and extent of such tumors. "Sarcoma is generally primary, usually involves the upper portion of the mediastinum and extends outward most commonly in the direction of the section between the upper and inner lobe of the right lung. It is generally irregular in outline, there is no expansile pulsation, and the characteristic extension would serve to make an exact diagnosis. Lipoma may develop to the size of the patient's head, as I have seen in one case, and in which it was almost perfectly symmetrical, and showed no involvement or line of extension to other organs. It lacked the involvement of the septum of the lung, as is commonly true in sarcoma."

Carcinoma is nearly always secondary, and most commonly a complication of carcinoma of the breast, resulting from a direct extension through the lymphatic system. The tumors are usually small, and commonly produce no direct pressure symptoms. Occasionally the whole upper mediastinal space becomes filled with malignant tissue. Hodgkin's disease frequently involves the mediastinal glands, producing tumors of variable size. Associated with glandular enlargement in the neck, this is important in the differential diagnosis with tuberculous glands which rarely involve the mediastinal glands but rather the bronchial glands. Thymic enlargement is recognized by an extension of an abnormal shadow outward, especially to the right, but it may also extend to the left of the manubrium, sometimes half an inch, sometimes an inch or more, so as to make a distinct tumor mass. Generally, however, this thymic enlargement is recognized by only a faint but definitely formed shadow extending from one-half to three-quarters of an inch to the right of the manubrium. Hoxie (35) says: "The fluoroscope should be used to verify all cases where the percussion would indicate thymic enlargement." Thoracic goiter may cast a distinct shadow or encroach upon the tracheal shadow, producing an hour-glass or S-shaped configuration (Hartung, 31). A case of endothelioma, seen by the author, produced an enormous irregular enlargement. Shen (60) has described a fibroma of the mediastinum.

All of the above tumors are non-pulsating, differing in that respect from aneurism of the aorta. This can be readily diagnosed with the aid of the fluoroscopic screen. The diagnosis of the variety of aneurism is important, for Hare (30) states that wiring with electrolysis for therapeutic purposes is contra-indicated in the fusiform type. Atheroma of the aorta is recognized, according to Pfahler (54) by the evidence of tortuosity and consists especially of a sharp projection to the left at the beginning of the descending portion of the arch; more important is the detection of calcareous plates in its walls by examining the patient in the oblique diameter. The discovery of the above conditions may have an important bearing on the advisability of performing an operation for some other condition.

Relative to heart lesions, Hirsch (33) summarizes the value of the roentgen examination as follows: "In a general way it may be said that this method, by permitting the visualization of the activities of the heart, gives such a definite conception of its shape and its relationship to the thoracic contents as no amount of percussion can give. One of the most important contributions of the roentgen ray in the examination of the heart has been to provide a method for its measurement. This method makes it possible to study with considerable accuracy the response of the diseased heart to therapeutic agencies, to foretell impending decompensation and to determine the particular portion of the heart subjected to the greatest stress. The basis of the diagnosis of cardiac valvular lesions by the roentgen ray is the change in form which follows disordered function resulting from diseased valves." Two main varieties may be described: (a) the mitral type or spherical heart with enlargement of the right below and left above; and (b) the aortic type or oval heart with increase of the left ventricular shadow and of the ascending aorta and arcus aortæ, and violent pulsation of the left ventricle. In mitral stenosis and persistent ductus Botalli the heart is rather small and there is an increase of the left auricular shadow.

In pericarditis with effusion the exudative changes cause an increase in the heart shadow in all directions, especially to the right, so that the transverse diameter tends to approach or exceed the longitudinal. The median shadow assumes a rounded broad triangular shape. Bythell (12) states: "In pericarditis and pericardial effusions an important diagnostic point is the loss of the 'cardiohepatic' angle; its absence is a perfectly reliable indication of the presence of pericardial fluid or of great thickening of the pericardium."

Lehman (41) describes the characteristics of pericarditis with adhesions as follows:

1. Band-like filling in of one or both cardiodiaphragmatic angles.

2. Distinct notch formation of the heart shadow contour.

3. Indistinct "fluttering" heart pulsations corresponding to a covering over of the heart shadow by broad adhesions.

4. Lessened motility of the diaphragm due to basal fixation in cases where the lungs are negative.

Coming within the thorax, brief mention will be made of lesions of the œsophagus, although little new has been added in the line of roentgen diagnosis within recent years. Diverticula can be readily recognized if they are filled up with an opaque meal or paste. In the same way constrictions, whether malignant or benign, can be shown if the narrowing is sufficiently marked to cause some obstruction to the meal. In order to see the changes before this occurs, Stewart (63) devised a long hollow cylinder of soft material, part of which he had the patient swallow. He then distended this tube with opaque contents and thus mapped out the entire œsophagus.

BIBLIOGRAPHY

1. Albers-Schoenberg. Fortschr. a. d. Geb. d. Roentgenstrahlen, 1911, xvi, 280.
2. Barclay. Am. J. Roentgenol., 1916, iii, 286.
3. Bauch. Med. Rec., 1916, lxxxix. No. 21.
4. Bazy. J. Am. M. Ass., 1917, lxviii, 1668.
5. Beck. Interst. M. J., 1916, xxiii, 259.
6. Idem. Am. J. Roentgenol., 1917, iv, 491.
7. Berry. Arch. Radiol. & Electroth., 1916, xxi, 213.
8. Bissell. Am. J. Roentgenol., 1916, iii, 131.
9. Idem. Am. J. Roentgenol., 1914, ii, 521.
10. Blaine. Am. J. Roentgenol., 1917, ix, 544.
11. Boardman. Am. J. Roentgenol., 1917, iv, 292.
12. Bythell. Arch. Radiol. & Electroth., 1916, xx, 321.
13. Childs. Interst. M. J., 1915, xxii, 604.
14. Cole. Am. J. Roentgenol., 1917, iv, 455.
15. Crane. Phila. Month. M. J., 1899, March.
16. Davidson, M. Brit. M. J., 1915, vi, 1.
17. Davis. Surg., Gynec. & Obst., 1916, xxii, 635.
18. Dunham. Am. J. Roentgenol., 1917, iv, 280.
19. Idem. Am. J. Roentgenol., 1916, iii, 131.
20. Dunham and Rockhill. J. Am. M. Ass., 1913, lxi, 826.
21. Entin. Fortschr. a. d. Geb. d. Roentgenstrahlen, 1915, xxiii, 19.
22. Editorial. Am. J. Roentgenol., 1917, iv, 484.
23. Giffin and Sheldon. J.-Lancet, 1915, xxxv, 223.
24. Grandy. J. Am. M. Ass., 1915, lxiv, 1237.
25. Green and Le Wald. Ann. Surg., 1916, lxiii, 657.
26. Grier. Am. J. Roentgenol., 1915, ii, 709.
27. Idem. Am. J. Roentgenol., 1916, iii, 123.
28. Hammesfahr. Fortschr. a. d. Geb. d. Roentgenstrahlen, 1916, xxiii, 243.
29. Hampson. Arch. Roentg. Ray, 1917, xix, 203.
30. Hare. J. Am. M. Ass., 1914, lxii, 1217.
31. Hartung. Illinois M. J., 1917, xxxi, 1.
32. Hirsch. Med. Rec., 1916, lxxxix, 1029.
33. Idem. J. Electrotherap. & Radiol., 1916, xxxiv, 351.
34. Holland, T. Arch. Roentg. Ray, 1915, xix, 307.
35. Hoxie. N. Y. M. J., 1916, ciii, 676.
36. Huest. Am. J. Roentgenol., 1916, iii, 465.
37. Ingals and Friedberg. J. Am. M. Ass., 1914, lxii, 610.
38. Jordan. Arch. Radiol. & Electroth., 1915, xx, 188.
39. Lange. J. Am. M. Ass., 1908, l, 673.
40. Ledoux-Lebard. Am. J. Roentgenol., 1916, iii, 286.
41. Lehman. Fortschr. a. d. Geb. d. Roentgenstrahlen, 1906, ix, 196.
42. Lilienthal. Med. Rec., 1917, p. 587.
43. Mace. J. Am. M. Ass., 1914, lxii, 674.
44. Manges. N. Y. M. J., 1917, cvi, 917.
45. McCleave. Am. J. Dis. Child., 1917, xiii, 252.
46. Mollow. Fortschr. a. d. Geb. d. Roentgenstrahlen, 1910, xv, 167.
47. Moore. J.-Lancet, 1917, xxxvii, 430.
48. Idem. Am. J. Roentgenol., 1916, iii, 525.
49. Idem. Am. J. Roentgenol., 1916, iii, 126.
50. Moynihan. Surg., Gynec. & Obst., 1917, xxv, 605.
51. Oram. Arch. Radiol. & Electroth., 1917, xxi, 277.
52. Overend. Arch. Radiol. & Electroth., 1916, xxi, 73.
53. Pancoast. Am. J. Roentgenol., 1917, iv, 462.
54. Pfahler. N. Y. M. J., 1916, ciii, 1161.
55. Idem. J. Am. M. Ass., 1906, xlvi, 23.
56. Pirie. Surg., Gynec. & Obst., 1914, xix, 549.
57. Rieder and Rosenthal. Fortschr. a. d. Geb. d. Roentgenstrahlen, 1899, iii, 100.
58. Savill. Arch. Radiol. & Electroth., 1916, xxi, 201.
59. Sewall and Childs. Arch. Int. Med., 1912, x, 45.
60. Shen. Boston M. & S. J., 1917, clxxvi, 53.
61. Skinner, E. H. Am. J. Roentgenol., 1917, iv, 350.
62. Stein. Surg., Gynec. & Obst., 1914, xviii, 547.
63. Stewart. Am. J. Roentgenol., 1916, iii, 765.
64. Idem. Am. J. Roentgenol., 1914, i, 464.
65. Straw. Arch. Radiol. & Electroth., 1917, xxi, 392.
66. Wadsack. Berl. klin. Wchnschr., 1906, xliii, 1097.
67. Weber. Fortschr. a. d. Geb. d. Roentgenstrahlen, 1911, xvii, 327.
68. Young. Arch. Radiol. & Electroth., 1917, xxii, July.

ABSTRACTS OF CURRENT LITERATURE

GENERAL SURGERY—SURGICAL TECHNIQUE

ASEPTIC AND ANTISEPTIC SURGERY

Gould, A. P.: Modern Antiseptics. *Brit. M. J.*, 1917, ii, 677.

Gould reviews the progress made in antiseptics. The entrance of bacteria into wounds was early recognized as the damaging factor in wound repair, and the prevention of wound contamination was heralded as a great advance in surgery.

The question which confronts the surgeon who comes in contact with a large number of already badly infected wounds is whether antiseptics cannot eradicate these same organisms from the tissues in which they are already growing, and leave the tissues free to heal in the same painless, feverless and rapid way as when no infection has occurred.

It is the infiltrated abscess wall which gives rise to symptoms. When the abscess is opened and the dead material is permitted to escape, the destructive process terminates, and healing begins.

When an acute abscess bursts and healing occurs, the following factors play a part in the process: (a) autogenous germicide; (b) preservation of the living surrounding tissue; (c) evacuation of all dead material and pus.

The author believes that mechanical cleansing and draining of the wound is not sufficient for wound healing. The natural germicidal properties, the author asserts, are slow and inadequate. Boric acid dressings as commonly employed must not be regarded as external, or heterogeneous antiseptic dressings. They may be of value only in stimulating the flow of the natural antiseptics.

Taking the natural method of sterilizing infected wounds as the model, the following principles must be observed: (a) efficient germicidal agents are to be used; (b) antiseptic agents must be innocuous to living tissue. Opposed to natural antiseptics are substances like pure carbolic acid, or substances poisonous when absorbed into the blood stream. (c) The efficient but harmless antiseptic should be applied continuously to the entire infected surface; and shall be so administered as to find its way to every spot in the germ-laden tissues. (d) The rapid removal from the wound of all dead and dying tissue is necessary. This should be accomplished early, and should be neither intermittent nor dependent upon such violent measures as strong irrigation or a firm pressure.

The author puts the treatment of infected wounds into three divisions:

1. The use of an antiseptic which is at once very highly germicidal and innocuous to human tissue; flavine is cited as an example.

2. Frequent gentle application of a potent germicide to the whole surface of the wound until the discharge is clinically sterile, and closure.

3. Immediate closure of the wound with a sufficient amount of reliable germicide.

Brilliant green and flavine are of some value, the author asserts, but are not new to the surgeon. The second method is that introduced by Carrel; the third is the Morison treatment.

In commenting on the Carrel method the author asserts that he has visited the hospital at Compiegne, and observed the method as carried out by Tuffier; the results were striking. He states that he has seen a large number of compound fractures which healed without any formation of pus. A large number of empyemas were treated by free incision and irrigation by the Carrel-Dakin solution with remarkable results. The aim of the Carrel treatment is to obtain clinical sterilization, and then to close the wound and secure union. No wound shall be closed until it has been proved to be practically sterile by three repeated bacteriologic examinations. He emphasizes the importance of carrying out the rules laid down by Carrel, and a personal observation by the surgeon himself of the details.

The Morison method consists in first removing from the surface of the wound as completely as possible all dead and dying tissue and tissue detritus, and all accumulations of discharges and of bacteria as well as blood-clot, and all other foreign matter. The wound is dried and filled with a paste called bipp; the paste is rubbed well into the wound, and then the wound is closed. A dressing is then applied which is to remain for twelve days. At that time the wound is found healed.

The author discusses this form of treatment at length, and considers this by far the most efficient means of wound disfection. The results that he observed were beyond belief. He did not come personally in contact with the cases treated by Morison, but his impressions were obtained from eye witnesses and from written reports which he read.

He concludes that the methods here advocated require a thorough understanding of the principles upon which they are founded, and must be thoroughly studied and scrupulously carried out by the surgeon, assisted by competent nurses.

M. A. Bernstein.

Dakin, H. D., and Dunham, E. K.: The Relative Germicidal Efficiency of Antiseptics of the Chlorine Group and Acriflavine and Other Dyes. *Brit. M. J.*, 1917, ii, 641.

When the unstable chlorine germicide is added to the medium and permitted to decompose, and then are added the micro-organisms, it will be found that the organisms will grow unchecked. The authors criticize experimenters for not observing these well-known principles, and assert that their failure is due to these errors.

Browning published a series of experiments in which the germicidal potency of various antiseptics of the chlorine group is compared with the various dye stuffs with results indicating a numerical superiority for the latter. This the authors assert to be untrue, and they attribute the results obtained by Browning and his associates to a wrong technique in testing the germicidal potency of the chlorine antiseptics.

The lethal concentration of chlorine-T tested against staphylococci in serum was taken as unity. The lethal concentration of chlorine-T in serum was stated to be 1:250. Much lower concentrations were published by other observers. The discrepancy was due to the fact that the antiseptic was added first to the medium and last to the organisms. No indication was given by Browning of the all-important interval of time elapsing between the two additions.

The hypochlorites and antiseptics of the chlorine group possess properties of instability and reactivity. They react with proteins, peptones and amino-acids to furnish products, some of which still possess germicidal properties, i.e., chloramines, and others which are entirely inert, i.e., chlorides and compounds containing chlorine united to carbon.

When a relatively large excess of protein acts on minimal quantities of hypochloride, no chloramine derivatives persist, and the whole of the chlorine is converted into germicidally inactive forms.

Experiments in which workers have taken protein-rich media, then added minute quantities of the chlorine antiseptics, and after an unstated interval, when all or most of the antiseptics have been decomposed, the mixture was inoculated with organisms, surprise was expressed at the ability to grow organisms. Under such circumstances the observed results depend much more on the rate of reaction between the antiseptic and the protein medium than upon germicidal action. Great difficulties are encountered in securing uniform laboratory experiments on the germicidal action of substances upon pus, largely owing to extreme variations in its composition and physical condition, and whether the infecting organisms are free or ingested in the leucocytes. Serum as a medium has a distinct advantage because of its fairly constant composition, although many organisms are very susceptible to the action of blood serum.

In conclusion, the author sets forth the following: (1) Rapid and complete disinfection was brought about by solutions of members of the chlorine group of antiseptics of the strength commonly used in the treatment of wounds, when added to heavily infected blood serum-muscle extract mixture. (2) Under similar circumstances solutions of acriflavine, proflavine, brilliant green, and malachite green failed to sterilize in six-hour mixtures which the chlorine antiseptics sterilized completely in five minutes or less. The author further shows that a 1:600 solution of chloramine-T can sterilize in six hours an infected blood serum-muscle extract which was not sterilized in six hours by 1:1,000 acriflavine.

The errors in Browning's experiments were: first, the addition of the chlorine antiseptics to the blood serum before adding the organisms; secondly, the use of weak bacterial concentrations in their tests, namely, 0.1 ccm. of a 1:20,000 dilution in saline of a twenty-four peptone water culture. It appears that the use of such small numbers of organisms is unsuited for the determination of the germicidal value of substances, for, in the first place, such a low concentration of organisms in the secretion of a wound of long standing borders on "surgical sterility" and is therefore not comparable with the concentration in acute septic wounds. If 5 per cent of the organisms in Browning's tests survived they would have a good chance of being entirely overlooked, and sterility might thus be inferred when viable organisms were actually present.

Another cause of the marked difference between the authors' and Browning's results was due to the fact that Browning allowed the antiseptics to act for twenty-four or forty-eight hours before testing, whereas in the authors' experiments subcultures were taken at frequent intervals, which brought under observation the progress of disinfection. The longer period naturally fosters a favorable judgment of the slowly acting dyes, while shorter periods are adverse to them. M. A. BERNSTEIN.

Bouet-Henry: Gutta-Percha Hyperthermic Dressings (Divers pansements hyperthermiques par la gutta-percha). *Bull. Acad. de méd.*, Par., 1917, lxxviii, 627.

The author, a gynecologist, has experimented for the past twenty years in the matter of dressings. He directs attention to the great value of thermotherapy not alone in gynecology but in war wounds. Older methods of applying paraffin, vaseline, etc., at a high temperature were not without danger of burns or pain because they could not be insolated during application. The author employs gutta-percha to supply this insolation. A mixture is made of a low grade paraffin, fusible at from 42° to 45°, with gutta-percha, in the proportion of 50 of gutta-percha to 1,000 paraffin. This can be applied without burning at a temperature of 70° to 90° and is painless and very pliable. It cools ten times more slowly than water applied at the same temperature. It has been successfully used in Pozzi's Gynecological Clinic and in several of the war ambulances.

W. A. BRENNAN.

Gould, A. P., and Others: A Report on the Carrel-Dakin Treatment of Wounds. *J. Roy. Army M. Corps*, Lond., 1917, xxix, 616.

The Commission headed by Gould recently visited Carrel's, Tuffier's, Chutro's, and other hospitals in France to study the Carrel-Dakin method in operation. In Carrel's and Tuffier's clinics the dressings are renewed every day. In Chutro's the inner dressing is changed daily for three days after an operation, and subsequently every second day. The outer dressing is renewed only about once a week. The Commission could not see that Chutro's less costly practice was attended with any disadvantage.

Every dressing was made by the surgeon himself under the strictest aseptic. He was assisted by a large staff of highly trained nurses, each charged with one step only in the preparation of the dressing. This made the technique elaborate and the process rapid. The Commission has since found that it is possible to carry out the dressings with two or at most three trained helpers.

In Carrel's and Tuffier's wards a "smear" is taken every second day. When the chart shows a count of less than one organism per field on three successive occasions, the wound is "clinically sterile" for operative closure. The making of these bacteriologic observations and counts is essential if the surgeon desires to practice secondary closure of infected wounds. In Chutro's clinic the procedure is simpler. In a large number of cases no bacteria charts are kept and smears are only examined once in ten days. Chutro does not secondarily close infected wounds.

The Commission refers to the methods for keeping the patient's bed dry.

The use of Dakin's fluid or eusol sometimes causes irritation around the wound. This must be guarded against. In Carrel's and Tuffier's clinic the skin for some distance beyond the wound is protected by a layer of gauze soaked in sterilized vaseline. Chutro applies vaseline only when he sees evidence of irritation and then he puts it on thickly by means of a sterilized wooden spatula. The Commission thinks that Chutro's plan is the simpler and that it is effective.

In Carrel's, Tuffier's and Chutro's clinics only Dakin's fluid is used. In other hospitals eusol and ether were used as well.

The Commission says that in estimating the value of the Carrel-Dakin treatment, the method of applying the antiseptic and the antiseptic employed must be appraised quite separately. While convinced that the use of the Carrel tubes is a very valuable means of applying an antiseptic, the Commission is not satisfied that Dakin's fluid is markedly superior to eusol, and it is prepared to find that other antiseptics can be used with advantage by the Carrel method.

The results of the Carrel-Dakin treatment as seen by the Commission in a large series of unselected cases were strikingly good:

1. The bacteria chart usually showed a rapid fall in the number of bacteria present in the discharge. Tuffier states that he can sterilize any wound by this treatment.

2. Many wounds rendered clinically sterile were then closed and healed by primary union. In some cases cavities in bone due to comminuted fracture or chronic osteomyelitis and necrosis had been filled with a subcutaneous fat graft and the skin edges sewn over the graft. Primary union occurred and the bone consolidated. Only wounds proved in the laboratory to be practically germ-free should be dealt with in this way. This point is insisted upon.

3 In Tuffier's clinic the treatment is most effective in postpneumonic and chronic empyema resulting from gunshots.

4. The Commission saw a large number of serious gunshot wounds treated by the Carrel-Dakin method in which there was no suppuration. These included compound fractures of the pelvis, femur, tibia and humerus, etc., as well as chronic osteomyelitis of various bones. In cases of badly uniting fractures Chutro does not hesitate to divide the bone to obtain proper alignment of the fragments.

5. The wounds granulated well, the granulations were even and florid; and so far as the Commission could judge, the healing progressed rapidly.

6. The patients looked well and were free from fever when the bacteria count was low. They made no complaints of the method.

7. The most striking evidence of the value of the treatment was a printed notice put up by Tuffier in his clinic as expressing his opinion after a considerable experience with the Carrel-Dakin treatment. This notice reads:

"Every patient who suppurates has the right to ask his surgeon the reason for it."

The objections raised to the treatment are in brief:

1. It requires the personal attention of the surgeon to each individual treatment. The number of cases that can be treated is therefore limited.

2. The technique is more elaborate than that of most wound dressings and causes a heavy strain on the staff.

3. It is alleged that flushing the wound every two hours is disturbing or painful to the patient.

4. There is difficulty in preparing the antiseptic fluids.

The Commission thinks that these objections are one and all of small account when compared with the proved advantages of the Carrel method.

The Commission is of opinion that the Carrel-Dakin method of treatment if carried out thoroughly is full of promise and believes that it will (1) diminish the dangers incidental to sepsis, including secondary hæmorrhage, (2) hasten the patient's convalescence, (3) lessen the liability to stiff joints and cicatricial deformities, (4) enable the patients to leave the hospital with better general health than they otherwise might, and (5) where secondary operation becomes necessary, those operations are more likely to be free

from septic complications than where some other system of primary treatment has been adopted.

An appendix to the report gives the full details of the preparation of Dakin's solution, according to Daufresne's technique. In France the cost of this solution works out at about three centimes per liter, so that the cost of treating an average case per twenty-four hours is only about one cent.

W. A. BRENNAN.

Gross, G., and Others: Primary Suture of War Wounds (Le suture primitive des plaies de guerre). *Bull. et mém. Soc. de chir. de Par.*, 1917, xliii, 1806.

Tissier has demonstrated that every war wound which is not infected by the streptococcus can be primarily sutured after appropriate surgical treatment and ought to heal. The authors have put this into effect. Of 727 wounded delivered to their hospital by the ambulance, 430 have been sutured primarily; 175 were not operated upon; 119 could not be sutured for various surgical reasons, and 3 cases were other than war wounds. Thus of those operated for war wounds, 78.3 per cent were primarily sutured. Of the sutured cases 209 were severe fractures. In the 430 patients 759 sutures were executed and these gave 675 unions by first intention. The stitches were removed by the tenth day and cicatrization was perfect. There were altogether 23 deaths in the cases sutured, but the majority of these deaths were due to abdominal, thoracic or other complications; and the authors say that in reality only 3 sutured wounds resulted fatally out of a total of 759 sutures.

The authors describe the details of their bacteriological examinations and surgical treatment. They think that the advantages of primary suture in war wounds are incontestable. The patients escape the danger of secondary infection which is so frequent when wounds are left open. In fresh wounds staphylococcic infection is found only in from 10 to 15 per cent, while in the territorial hospitals 80 per cent of the wounded show this infecting agent.

Besides these advantages it is beyond doubt that from the economic point of view, the results are of the highest importance; there is economy of time and material and a considerable economy in hospitalization and in pensions. Patients with gross injuries of the soft parts are completely cured about the thirtieth day. The only conditions necessary to realize the excellent results obtainable is to assign a competent bacteriologist to work with competent surgeons, and to allow them to keep patients until cicatrization is complete. W. A. BRENNAN.

ANÆSTHETICS

Echols, F. S.: Anæsthesia and the Anæsthetist. *Virg. M. Semi-Month.*, 1917, xxii, 375.

It is the object of the author to give to the novice the fundamental principles of anæsthetics and a working technique for the use of ether by the open drop method. He defines surgical anæsthesia as "a condition of unconsciousness sufficiently complete to allow surgical operations to be performed without pain and with as little shock to the nervous system as possible." He claims that in the administration of all anæsthetics until the patient is in absolute surgical anæsthesia there is more or less shock.

The three stages of anæsthesia are well described, with the symptoms and their proper interpretation noted. The duties of the anæsthetist to the patient and to the operator are clearly set forth in such a manner as to impress upon the anæsthetist that he has no time for close observation of the operative technique itself. He describes a fourth stage of anæsthesia, the stage of too deep anæsthesia, the danger zone. The symptoms, with their proper interpretation and methods to combat this undesirable stage, are clearly given.

Cyanosis itself in the third stage is not necessarily a sign of too deep anæsthesia. The author finds that some people cannot be anæsthetized sufficiently to permit of an operation unless they are cyanosed all the time. The respiration must be carefully watched in these cases and as long as the breathing is regular the patient will have no difficulty. In case of apnœa during the course of an otherwise smooth anæsthesia, the author makes several useful suggestions to force breathing as soon as possible.

The article concludes with several valuable suggestions. Most important of all is the warning to the anæsthetist not to "get excited"; an excitable person is much more dangerous than is an absolute novice who follows the prescribed rules and keeps his head. ELLIS FISCHEL.

Thompson, J. E.: An Anatomical and Experimental Study of Sacral Anæsthesia. *Ann. Surg.*, Phila., 1917, lxvi, 718.

Sacral anæsthesia is used as a routine procedure in the surgical clinic of the John Sealy Hospital in all operations on the anal canal and lower rectum, in perineal operations, in external urethrotomies, and in operations on the body of the penis, also when combined with local infiltration of the abdominal wall in cystotomies and suprapubic prostatectomies.

The solution is made by dissolving three No. A tablets in 30 ccm. of distilled water and adding 10 drops of 50 per cent solution of calcium chloride. The composition of the A tablets is novocaine 0.125 gm., and suprarenin 0.000125 gm; 30 ccm. is injected into the sacral canal. As a rule one injection is sufficient and anæsthesia is complete in half an hour in the branches supplied by the sacral nerves.

The region of the anus loses its sensibility first. Even though anæsthesia may be complete to the knife or cautery, the patient may resent rough dilatation of the sphincter. It has been found that the greatest intensity of action is shown in the areas supplied by the sacral nerves from the second downward, but that it extends in many cases upward as high as the upper lumbar and lower dorsal nerves.

Sometimes the anæsthesia is deep enough to allow performance of operations on the scrotum, the inguinal region, the dorsum of the penis, and the suprapubic region of the abdomen. The clitoris and labia minora do not often lose their sensibility completely.

The author presents charts to show in graphic manner the area of anæsthesia, the time taken for the anæsthetic to produce its effect, and the spinal segments affected.

The injecting needle seldom passes higher than the third sacral vertebra. The author conducted a series of experiments upon 15 cadavers in which staining fluid was used instead of the anæsthetic solution, and it was found that the fluid diffuses upward to levels varying from the third thoracic vertebra in eight bodies to the seventh cervical in one body. In none of the bodies did any of the injection fluid get inside the dura mater. In every case there was deep staining of both the anterior and the posterior branches of the sacral nerves.

In giving the anæsthetic, the needle enters the hiatus sacralis, which can be felt easily in a thin subject, but in obese subjects, where the bony landmarks are obscure, the needle can be introduced about an inch above the end of the sacrum. The direction of the needle should be upward, directly in the middle line. Some resistance will be felt as the needle penetrates the fibrous membrane closing the hiatus, and it is not necessary to insert the needle any farther than 3 to 4 cm. If cerebrospinal fluid flows, the needle should be withdrawn to a lower level until the fluid ceases to flow.

For purposes of making a more complete study, 33 sacra in the dissecting room were examined and the author presents a table of the anatomical features. In 24 of the 33 specimens the probe passed along the whole canal. In the remaining 9 it passed, in all except one, as high or higher than the second sacral foramen. In this specimen it passed as high as the upper part of the fourth sacral foramen. In only one case was the canal so narrow as to raise doubts whether a needle could be passed along it. In every case the sacral canal was accessible to the needle. There seems no reason to doubt that if the needle penetrates the fibrous membrane that closes the hiatus and enters the loose cellular space, the injected fluid will pass upward around the nerves and around the dura mater. V. C. HUNT.

SURGICAL INSTRUMENTS AND APPARATUS

Marshall, H. W.: An Orthopedic Innersole for Shoes. *Am. J. Orthop. Surg.*, 1917, xv, 788.

The device which the author describes is an innersole which is designed to support the longitudinal arch by means of props in the scaphoid region and also to relieve calluses in the front part of the foot by correcting the anterior arch defects.

It consists essentially of two small metal plates attached to a flexible leather insole, one plate being placed at the heel and prolonged forward on the inner side as far as the scaphoid bone, and the other located just back of the heads of the metatarsal bones, constituting a base upon which to build supports for calluses, rigid toes, and other troubles.

The device is not adapted for routine use by inexperienced persons, since careful fitting is necessary, especially for the anterior defects; otherwise the numerous faults and errors arising from the use of usual store appliances will be encountered.

R. B. COFIELD.

Myles, R. C.: Aspiration or Vacuum Suction Apparatus. *N. Y. M. J.*, 1917, cvi, 629.

The author advocates the use of some type of suction apparatus in cases where the ability to swallow or cough has been partially or completely lost and the patient is being practically drowned in his own secretions. He cites one case in which considerable relief was obtained from the use of such an apparatus and two others in which it was of life-saving value. H. H. FREILICH.

SURGERY OF THE HEAD AND NECK

HEAD

Nichols, E. H.: Indications for Operation on Traumatic Head Cases. *Boston M. & S. J.*, 1917, clxxvii, 508.

Nichols makes the following observations regarding operative treatment of traumatic head cases:

1. Uncomplicated œdema of the brain almost never requires operation.

2. Slight laceration of the brain with persisting œdema sometimes requires operation to prevent cerebral degeneration. The subtemporal method is the best operation.

3. Slight extracerebral hæmorrhage seldom requires operation.

4. Extensive extracerebral hæmorrhage from rupture of the middle meningeal artery, with or without focal symptoms, should always be operated upon.

5. Basilar hæmorrhage seldom can be cured by operation. When operation is done, it should be on selected cases for relief of pressure, and usually by skin-bone-flap method.

6. Intracerebral hæmorrhage cannot be cured by operation, although pressure may be relieved.

7. Fracture of the skull, by itself, is of little importance except when compounded, when it may produce meningitis unless made aseptic. All depressed fractures involving the entire thickness of the skull should be elevated. G. W. HOCHREIN.

Molinié and Lannois: Restoration of Facial Mutilations by Strips Taken from the Frontal Region (Restauration de quelques mutilations de la face au moyen de lambeaux ostéo-périosto-cutanés avec pedicule prelevés dans la region frontale). *Lyon méd.*, 1917, cxxvi, 562.

A transplant to be used in plastic operations on the face must possess the stability desired to reconstitute a skeletal part, with an assurance of vitality. The authors think that the frontal region is most appropriate in every respect. Its structure and extent fulfills almost all needs; its tissue is diploic and highly vascularized, and it is in the vicinity of the part to be repaired. A bone fragment can be removed, leaving its periosteo-cutaneous coverings adherent, and this can be cut in the form of a pediculated strip so that it can be placed where required and still be kept, by means of its pedicle, in relation with the region from which it has been extracted, and which nourishes it.

Five cases of mutilations have been so treated without any mishap, and the results have been excellent. W. A. BRENNAN.

Kaufman, A. S.: Lateral Sinus Thrombosis. *N. Y. M. J.*, 1917, cvi, 1216.

The author has had five cases of sinus thrombosis under his care which, on account of atypical symptoms, were not diagnosed until the operation.

The routes of infection of the lateral sinus occur in anatomical sequence, as follows: first, direct infection of the jugular bulb. This condition may complicate suppurative otitis media without a true septic involvement of the mastoid process. It occurs in children where the floor of the tympanum is wanting or is in the process of ossification. Second is the involvement of the veins emptying into the sinus, particularly the emissary veins, which become blocked with thrombi. Third and most common is the direct phlebitis following necrosis of the bony structures of the mastoid; and last, the involvement from an acute suppurative otitis media.

The diagnosis is not difficult in typical cases. There is usually a history of an acute or chronic suppurative otitis media. The patient notices a dull, heavy sensation on the affected side of the head for a few days, followed by a chill and a rise of temperature, with a profuse sweat. The temperature may then come down to normal, and the symptoms subside only to recur after a short interval, indicating the presence of general sepsis.

The pathology of this symptom group is explained in the following way: As the clot becomes infected, a small piece separates from the main portion and enters the blood stream, producing the evidence of septic infection. This is shortly overcome by the phagocytic action of the blood. This process is continued until there is involvement of the viscera from metastatic emboli. When the upper part of the clot breaks down, the lower remaining firm, particularly the part in the jugular vein, the symptoms are ushered in without warning. Early and free incision of the membrana tympani is the proper procedure to follow in trying to prevent an empyema or necrosis of the mastoid. The difficulty of diagnosis arises in cases when otorrhœa is apparently the only sign of trouble. "When a discharge continues purulent with the opening in the membrana tympani posterior, and when there is indication of the membrane becoming further destroyed, mastoid exenteration is called for in order to save the patient's hearing and to prevent complications such as the one under discussion."

The author does not believe that it is necessary to uncover the sinus in every mastoid operation, as when the bony wall appears healthy and the patient presents no symptoms of sinus trouble.

In hæmorrhagic mastoiditis the discharge from the ear is usually bloody, but in sinus thrombosis the bleeding occurs only after the operative work is begun on the bone.

"There is no harm in exposing a healthy sinus if it is done carefully, while if a diseased condition is revealed, it will serve to prevent a subsequent operation and possibly save the patient's life."

The author continues with the statement that the treatment of the jugular vein is a debated question. He is inclined to agree with those who believe in ligation in every case, unless there is some strong contra-indication to a prolongation of the operation for the following reasons: (1) It is possible that a small piece of infected embolus may be carried into the general circulation, causing further complications. (2) The thrombus may extend down the jugular, and after the clot is removed from the sinus and bulb, free bleeding may come from the inferior petrosal sinus, giving the appearance of a clear sinus and vein; but later the venous clot breaks down and the infected débris is carried into the circulation by the blood coming from the facial vein and other veins below it. The author prefers ligation, but believes that the neck should be opened and the flow through the internal jugular interrupted before the sinus is opened and the clot removed.

M. A. BERNSTEIN.

Hancock, T. H.: Report of a Case of Recovery from a Compound Comminuted, Depressed Fracture of the Frontal Bone, with Loss of Brain Substance. *Internat. J. Surg.*, 1917, xxx, 356.

The case here reported is of a young girl sixteen years of age who was injured in an automobile collision. When examined, it was found that she had sustained a fracture of the skull involving almost all of the perpendicular portion of the frontal bone. The fracture was comminuted and depressed, allowing particles of brain matter to escape. Her four upper and lower incisors were knocked out, and a compound comminuted fracture of the lower maxilla was discovered. She was in extreme shock. No anæsthetic was given, fragments of bone were removed, and the surface was cleansed with sterile water. The laceration in the dura was

not closed, but a rubber drain three-eighths of an inch was inserted, so that both ends protruded from the wound. The skin was closed with silkworm suture. The patient was given supportive treatment, such as enemas, a dose of one-fourth of a grain of morphine sulphate, calomel on the fifth day, and argyrol was applied to the eyes.

A temperature of 100.4°F. developed on the fourth day, which was the result of an infection of the jaw. This was opened and drained. Consciousness returned on the third day. On the tenth day the fractured jaw was reduced under anæsthesia. The drain was removed on the fifth day, and the patient from that time made an uneventful recovery.

In commenting on the case, the author asserts that the loss of bone was extensive, and that it was unwise to replace it with foreign material. The fracture was not over the motor area, so that the likelihood of paralysis or epilepsy was not feared. No attempt was therefore made to protect the cortex, as was suggested by Nicolson, who used celluloid plates in place of the removed bone of the skull. The introduction of foreign materials is contra-indicated in compound fractures in any locality, for fear of introducing infection.

M. A. BERNSTEIN.

Real, P., and Gauthier, L.: Prosthetic Treatment of Lower Jaw Fractures (Cura prostetica delle fratture della mandibolo). *Ann. di odont.*, Roma, 1917, ii, 479.

In the treatment of fracture of the body of the mandible, if the fracture is recent and the loss of substance not more than 1.5 cm., the authors use a bridge or double arch. If the posterior fragment has no teeth, the reduction appliance consists of a splint cemented on the anterior fragment in normal occlusion with the upper teeth and in a sort of saddle connected with the anterior splint by two pivots. This saddle leans against the posterior fragment, pushing it into normal position.

If the loss of substance is more than 1.5 cm., but not exceeding 3 cm., the posterior fragment is pulled forward; in cases where the loss exceeds 3 cm. the fragments are immobilized in normal position by a double arch and bands.

Fractures of the ramus generally heal without treatment, but in some cases there is a vertical displacement which must be corrected.

When the loss of substance exceeds 3 cm., the fracture cannot heal and pseudarthrosis is almost certain; osteosynthesis or bone grafting must then be tried, and if this fails prosthetics may give some benefit.

W. A. BRENNAN.

Bichelonne, H.: Cranial Wounds (Blessures du crane). *Arch. de méd. et pharm. mil.*, Par., 1917, lxvii, 61.

In the military hospital of which the author has charge, 1910 patients with cranial injuries were received between February and August, 1916. Of these, 967 had been operated upon at the front. The other 963 had apparently only scalp wounds. These 963 scalp wounds were systematically explored by the surgeons at the base hospital and 207, or 21.95 per cent, gave positive results. This large percentage shows the necessity of the systematic exploration of all cranial wounds in war.

W. A. BRENNAN.

Monprofit and Courty: Cranial Gunshot Wounds in War Surgery (Blessures du crane par projectiles de guerre dans la chirurgie de l'avant). *Arch. de méd. et pharm. mil.*, Par., 1917, lxvi, 790.

Of 900 wounded treated in the authors' ambulance, 299 were cranial injuries, 144 of these so extensive that they were inoperable; 131 were trepanned. Of the 131 the dura mater was nonperforated in 50 and perforated in 81. The figures show that the proportion of perforated to nonperforated in the whole series was about four to one.

There are various factors which enter into the prognosis as regards life and functional preservation in cranial wounds, viz: the state of the dura; the type of fracture; its position; the presence or absence of projectiles; the extent of cerebral lesions and their position. Of these the more important as regards life are the state of the dura and the presence of projectile particles. If these latter are large, the dura is always more or less extensively ruptured. The real gravity of cranial lesions can only be judged by the study of collected statistics of cases extending over a long period.

The author's 131 trepanned cases resulted as follows: (a) with intact dura mater, trepanned, 49; evacuated, 44; dead, 4; in course of treatment, 1; (b) with perforated dura mater, trepanned, 82; dead, 42; evacuated, 32; in course of treatment, 9.

These figures show the value of the condition of the dura with regard to prognosis.

With regard to intracranial projectiles, until recently their presence was considered fatal, but recent views have shown that wounded men with a retained projectile have no higher mortality than those cases in which the projectile has passed through; and that the mortality in cases where a projectile has been immediately extracted does not seem less than in similar injuries where the projectile was not extracted.

Marie has stated that he observed 31 old cases with intracranial projectiles, in 29 of which there was absolute tolerance and in only 2 cases were there epileptiform crises.

W. A. BRENNAN.

Harris, C. T., and Nissen, H. A.: A Series of Fractured Skulls from the Surgical Records of the Boston City Hospital, 1902–1917. *Boston M. & S. J.*, 1917, clxxvii, 870.

The statistics of the Boston City Hospital here given are from 1902 to 1917.

A diagnosis of fracture of the skull was made 540 times.

The paper deals with the definitely proved cases, which comprise 334. The causes as given in the histories were as follows: accident, 271 cases; alcohol, 60 cases; suicide, 8 cases; assault, 15; and unknown, 1 case.

The type of injury was as follows: simple fractures, 186 cases; compound fractures, 147; depressed fractures, 114.

The number of operative cases were 48.7 per cent; non-operative cases, 51.3 per cent. Of 123 operated cases, 60 were relieved and 63 died. Of the 207 non-operated cases those relieved were 114, while 93 died. The deaths which resulted from one to several weeks after operation were due to septic meningitis, erysipelas, pneumonia, brain abscess, and delirium tremens. The compound fractures required immediate operation, at least within twenty-four or thirty-six hours after the time of the injury. The simple fractures, unless definite depression was made out, were operated upon from thirty-six hours to ten days after injury.

The operative indications were: (a) increasing intracranial pressure; (b) nausea, vomiting, choked disk, or focal signs.

Fracture of the temporal bones occurred in fifty cases, or 15.1 per cent. Fracture through the bony wall of the auditory canal was found in many. Bleeding from one or both ears was not considered a diagnostic sign.

Fracture of the occipital bone occurred in thirty-five cases, or 10.7 per cent. The operative results in thirteen compound fractures were three recoveries.

Fracture of the base occurred in sixty-four cases, or 19.4 per cent.

The percentage of cases relieved was inversely proportional to the change from the normal mental condition. In those cases where there existed dilated or fixed pupils, the prognosis was unfavorable. In those cases in which a small portion of bone was removed, the dura being left intact, the pressure symptoms did not clear up. Thus, the author concludes, for a complete decompression it is necessary not only to open the bone structure, but also the dura as well. Suture of the lacerated dura was not successful because of the inability to approximate its edges. There was no advantage in using a rubber drain, since immediate closure of the dura followed with as good results. In those cases where a rubber drain was used, infection followed with a fatal termination.

In conclusion the author emphasizes the following points:

1. Routine two-hour blood-pressure readings, for the first twenty-four to forty-eight hours.
2. Lumbar puncture in all cases.
3. Fundus examination at entrance.
4. X-ray examination of all head injuries.
5. Withholding of morphine until a definite diagnosis is made.
6. Thorough neurological examination.

M. A. BERNSTEIN.

Lapayre, N.: End-Results of Trepanations for War Injuries (Résultats eloignés des trépanations pour plaies de guerre). *Bull. et mém. Soc. de chir. de Par.*, 1917, xliii, 2048.

Lapayre's report includes 20 cases of cranial injury without dura mater lesions. All have recovered after trepanning. The condition two years later shows that 12 have returned to military duty. There were 40 cranial encephalic wounds, 27 of which died of infection within fifty days after operation. None died later, so that the prognosis of definite recovery after an interval of sixty days is very probable.

No plastic operations have been done on the survivors. Two required a secondary operation, one for hernia and the other for epileptiform seizures. Only two of the thirteen can be said to be definitely cured. The others have a greater or less degree of cephalalgia and vertigo. Marked aphasia in two cases has almost disappeared, as have slight motor-sensory disturbances in three other cases. However, complete paralysis in one case remains.

Complete recovery therefore is very rare in penetrating cranial wounds, but when the lesion is in the rolandic zone, the subsequent troubles are slight and are compatible with an active life.

The series of cases has shown that the factor of seriousness in a cerebral lesion is its depth rather than its extent, which follows from the difficulty or impossibility of complete disinfection.

Derache recently reported the psychological examination of 24 old operated cases. Four were normal, 13 subnormal, and 7 intellectually deficient.

The future of trepanned cases must be considered from two points of view. As regards survival, infective complications become more rare, the more removed the case is from the time of injury. From the psychic standpoint the prognosis is very poor.

In discussing the report, Tuffier said that the question of the accidents consecutive to craniocerebral wounds had been taken up at the Interallied Surgical Conference. The facts showed that grave infection in craniocerebral wounds was much more rare than was supposed.

In more than 6,000 cases reported, there were 676 partial epileptic seizures, 94 late cerebral abscesses, 32 cases of late meningitis, and 54 cases of late cerebral hernia.

W. A. BRENNAN.

Elsberg, C. A.: Chronic Internal Hydrocephalus; the Newer Methods for Its Recognition and Treatment. *Interst. M. J.*, 1917, xxiv, 1114.

The name hydrocephalus originated with the earliest medical authors, who included under this term a large variety of pathological conditions, varying from hæmatoma of the scalp to distension of the ventricles of the brain.

Investigations have shown that the main, if not the only, sources of the cerebrospinal fluid are the choroid plexuses of the ventricles which Mott calls "choroid glands," that the secretion is almost constant, and that its rate varies and is influenced by a number of factors. The rate of flow in animals is

increased by asphyxia, by anæsthesia, and by many drugs and organ extracts, especially by extracts of choroid plexus or brain tissue. The only glandular substance known to have a specific inhibitory effect on the secretory activity of the choroid plexus is thyroid extract.

Under normal conditions the cerebrospinal fluid leaves the ventricles and is absorbed from the subarachnoid space of the brain and spinal cord directly into the blood stream. Investigators have shown that no fluid is absorbed by the walls of the ventricles, that perhaps a little may enter the blood stream by the veins of Galen, but that the greater part is absorbed by the villi of the arachnoid membrane over the convexities of the brain.

Experimental and clinical evidence shows that there is a circulation of cerebrospinal fluid and that it follows a regular course, passing from its source in the lateral ventricles into the third and through the iter into the fourth ventricle, leaving the fourth ventricle by the foramina of Magendie and Luschka, the greater part of the fluid passing downward in the spinal canal on the posterior aspect of the spinal cord. There is believed to be a steady flow of fluid downward behind the spinal cord and upward on its anterior surfaces spreading over the convexities of the hemispheres where it is absorbed into the blood stream.

This scheme of circulation shows why spina bifida is so apt to be complicated by hydrocephalus, and why the hydrocephalus is so apt to become aggravated after operative treatment of the spinal condition. In spina bifida there is an obstruction to the downward passage of fluid in the spinal canal and hence a retention of fluid in the ventricles.

The amount of fluid in the ventricles and in the subarachnoid space is kept within normal bounds by the proper balance between the amount secreted by the choroid plexus and the amount absorbed by the arachnoid villi. If the secretion is retained in the ventricles by an obstruction in the aqueduct of Sylvius or in the foramina of Magendie and Luschka, then the fluid collects in the ventricles, the latter becomes distended and the typical obstructive internal hydrocephalus results.

If there is either a hypersecretion of fluid so that more is secreted than can be taken care of by the arachnoid villi, or if the absorptive power of the arachnoid is diminished, or a combination of these two conditions obtains, the secretion collects and distends the ventricles, producing the non-obstructive hydrocephalus, which is divided into that due to hypersecretion and that due to diminished absorption.

The term hydrocephalus almost always means internal hydrocephalus, no matter whether the retention of fluid is due to obstruction, diminished absorption, or hypersecretion. A slight increase of fluid in the subarachnoid space over the hemispheres is sometimes met with, but considerable fluid worthy of the name of external hydrocephalus is exceedingly rare.

To the three different types of hydrocephalus, that due to obstruction, that due to diminished absorption, and that due to hypersecretion, Frazier adds a fourth type which he calls "occult hydrocephalus," the accumulation of fluid in this variety being due to lack of balance between the secretion and absorption of the cerebrospinal fluid.

For the differentiation of these various types a method has been devised, using phenolsulphonephthalein as an indicator. Normally, phenolsulphonephthalein introduced into the ventricles appeared in the urine in from ten to twelve minutes, and during two hours 12 to 20 per cent was excreted. Introduced into the subarachnoid space, the dye appeared in the urine in from six to eight minutes and 35 to 60 per cent was excreted in two hours. The dye passed readily from the ventricles to the subarachnoid space, and appeared in the spinal fluid in from one to three minutes.

A lumbar puncture is done, a cubic centimeter of fluid is withdrawn, and one ccm. of sterile neutral phenolsulphonephthalein is injected. If less than 30 per cent of the dye is excreted in the next two hours, there is diminished absorption from the subarachnoid space. In several of the patients not a trace of dye appeared in the urine in four to six hours.

In a few the ventricular injection was made. In infants the ventricle is punctured through the lateral angle of the anterior fontanelle, one ccm. of fluid withdrawn and one ccm. of phenolsulphonephthalein injected. A spinal puncture is then made and if the dye fails to appear in the spinal fluid within ten minutes, the case is one of obstructive hydrocephalus.

To determine whether or not there is hypersecretion of the cerebrospinal fluid, a spinal puncture is done every day or every other day. When the secretion is normal, the quantity and pressure of the fluid becomes steadily less after the first two or three punctures. In hypersecretion, however, the amount of fluid obtained and the pressure under which it escapes remains constant for long periods.

Unilateral obstructive hydrocephalus from obstruction of the foramen of Monro undoubtedly occurs.

The forty patients with chronic hydrocephalus were divided as follows: obstructive hydrocephalus, 10 cases; non-obstructive hydrocephalus, 30 cases; non-obstructive, diminished absorption, 18 cases; non-obstructive hypersecretion, 6 cases; non-obstructive, diminished absorption and hypersecretion, 6 cases.

Many methods of treatment have been tried, many attempts have been made to drain the fluid from the ventricles to the pleural cavity, to the retroperitoneal cellular tissue, to the venous circulation, to the subdural space, and to the subcutaneous tissues of the scalp, but all failed regularly. Drainage to the outside of the body is an old method which Henschen in 1911 concluded, after an exhaustive study, is fatal in 90 per cent of patients.

In hydrocephalus due to obstruction, puncture of the corpus callosum has given very satisfactory results, and a complete cure may be effected.

In patients with hydrocephalus due to hypersecretion, a lumbar puncture should be done every few days, and the patient given thyroid extract in increasing doses up to the physiological limit. The author considers the thyroid treatment of great value and has seen a number of very satisfactory results in this type of hydrocephalus from the combined treatment of thyroid feeding and repeated lumbar puncture.

The cases of hydrocephalus due to diminished absorption are the most unfavorable cases for treatment and there are no satisfactory methods of gaining relief.

In those who have had a chronic hydrocephalus the size of the head will always remain larger than normal, although its circumference may diminish considerably if the treatment is successful. Under successful treatment papillœdemata will subside rapidly and improvement in the eye-grounds and vision occurs. Ataxia of long standing requires years for its complete disappearance. V. C. HUNT.

Valabregar, M.: Primary Pneumococcic Cerebral Abscess (Absceso cerebral primitive apneumococos). *Pediat. espan.*, Madrid, 1917, vi, 247.

A child of seven years had an attack of jacksonian epilepsy predominating in the left upper limb, accompanied by headache and vomiting. There was neither paralysis nor fever. The spinal fluid was normal. The child suddenly became comatose with rigidity of the neck, Cheyne-Stokes respiration, Kernig's sign and clonic contractions in the right hand, and died after a few hours.

Autopsy showed adhesions of the dura mater about the left frontal lobe region. On separating these an abscess was found occupying the left frontal lobe and containing about 100 gr. of pus. Pneumococci were found in the pus. There was no apparent otitis, nor any pulmonary process. The cerebral abscess was apparently primary and due to the pneumococcus. W. A. BRENNAN.

Besta, C.: Ether Narcosis in Cerebral Wounds (Narcosi eterea in feriti cerebrali). *Gazz. d. osp. e d. clin.*, Milano, 1917, xxxviii, 711.

Besta refers to some singular phenomena observed in soldiers operated for cerebral injuries during ether narcosis.

It is already known that in cases of cerebral lesion during chloroform narcosis the patellar reflex can persist, as well as contracture of the limb, due to the cerebral lesion. But during ether narcosis in patients affected with cortical lesions there is the occurrence of more or less intense contractures associated with a sharp augmentation of reflex excitability to mechanical stimuli in determined muscle groups, and which are not shown when the individual is awake. These facts are strictly related to the cerebral zone injured and occur exclusively in cases of injury to the rolandic zone, not being observed in injuries to other regions. There is also an undoubted relation between the location of the functional lesion and that of the contractures.

The author refrains from a discussion until other observations have been made and the clinical effects compared and discussed. W. A. BRENNAN.

Senise, T.: Experimental Regional Obliteration of Cerebral Vessels (L'obliterazione sperimentale regionale dei vasi cerebrali). *Ann. di nevrol.*, Napoli, 1917, xxxiv, 81.

Senise gives a historical review of the various methods adopted for the experimental study of the functions of the nervous system, especially of the brain, namely, methods of destruction, methods of stimulation, methods of inhibition, and methods of compression.

He proposes a new method, the experimental regional obliteration of cerebral vessels, or the experimental anæmia of a selected cerebral territory. He suggests opening the cranium of a higher mammal at a given point with the trepan or scalpel, and under rigorous asepsis to ligate the artery or arteriole corresponding to the selected trepanned point which irrigates a certain field or cerebral territory; and then to observe the consecutive nervous disturbances. He finds in literature that Vulpian and others studied the effects of anæmia on the brain by injection of air or lycopodium powder into the carotid; but his proposal differs from this, and has, he thinks, many advantages. W. A. BRENNAN.

NECK

Wohl, M. G.: Carcinoma of Lateral Aberrant Thyroid. *Interst. M. J.*, 1917, xxiv, 1044.

By an aberrant thyroid is understood thyroid tissue that is normal or abnormal, and not connected with the thyroid gland itself, occurring along the path occupied by the gland during its embryonal development. This definition excludes thyroid tissue found in the pleura, or in the bones and the abdominal cavity. Thyroid cells may become dislodged and remain along the duct, giving rise to the median aberrant thyroids, designated superior or inferior according to the location above or below the hyoid bone.

The origin of lateral aberrant thyroid is a matter of speculation, since the ability of the lateral anlage to produce thyroid tissue has been refuted. The most plausible explanation for its occurrence is that during fusion of the ultimo-branchial bodies with the median anlage, islands of cells become detached from the lateral portions of the median anlage and remain dormant until later in life, when for some reason they commence to grow and initiate pathologic processes.

The author reports the case of a female, aged 19, who noticed two years previous a small lump on the right side of the neck. There was no pain. The tumor had grown a little lately. Physical examination showed a small, hard, roundish tumor just beneath the anterior edge of the right sternomastoid

muscle on a level with the hyoid bone. It was not quite as large as a small bantam egg. The tumor had a cartilage-like feel; it was freely movable from side to side and also up and down. The thyroid gland was apparently normal. When removed, the specimen consisted of five nodules varying in size from a pea to a pecan, encapsulated and interconnected by connective-tissue bands. Microscopic examination revealed papillary adenocarcinoma of the thyroid tissue.

The author states that carcinomatous proliferation of the lateral aberrant thyroid is very rare, there being only five such cases reported in the literature. His own patient was the youngest case ever recorded. The preponderance of the female sex over the male is five to one.

The surgeon should bear in mind in the differential diagnosis of tumors of the neck the possibility of a lateral aberrant thyroid, especially if the patient is a female and the tumor has a tendency to fluctuate during menstruation. Before the tumor is removed, unless carcinomatous, as shown by rapid growth and infiltration of neighboring tissues, the presence of a normal thyroid should be ascertained, as the aberrant thryoid may be the only one that the patient has. P. G. SKILLERN, JR.

Miller, C. S.: Exophthalmic Goiter. *N. Y. M. J.*, 1917, cvi, 1210.

Statistical deductions made by Miller state that deaths from diseases of the thyroid gland in Philadelphia from 1906 to 1915 inclusive show that the proportion of exophthalmic goiter to other diseases of the thyroid was three to one. He further asserts that disease of the thyroid gland is increasing. Hardilicka, of the United States National Museum, has shown that in certain portions of the Indian tribes, goiter exists at the rate of 3 per 1,000, while in portions of the negroes, it exists at the rate of 61 per 1,000. The statistics which Hardilicka cites are those from the United States, England and Wales.

The greatest number of deaths from goiter occur between the ages of forty and forty-nine. The explanation for the deaths occurring at this period of life, the author believes, are due to the mental and physical strain incident to active adult life.

The death rate from goiter is higher in cities, which can be explained by the fact that city life is associated with a greater strain. The idea that infected water or water rich in certain minerals is a direct cause of goiter has not been proved to be true, and the density of population has little or no effect on the prevalence of goiter.

The author concludes with the following summary: Inasmuch as it develops in persons subject to nervous strain, possibly due to the influences of their environment and at a period of life when this strain is most acute; and from the indications of overactivity of this gland as presented normally in certain states of health such as pregnancy and menstruation, it is reasonable to infer that all causes point to the development of some poison within the body due to faulty metabolism. In turn, this faulty metabolism of the body is influenced by the habits and life of the individual. Therefore the theory that nervous enervation or nervous control is directly responsible for the development of goiter in its various forms and the nervous symptoms manifested in a well developed case are in turn secondary to the reflex effect of the goiter constitutes a vicious circle. M. A. BERNSTEIN.

Dunhill, T. P.: Discussion of the Surgery of Exophthalmic Goiter. *Lancet*, Lond., 1917, cxciii, 883.

Dunhill has performed the operation for removal of thyroid tissue in fifteen hundred cases. In his paper he discusses the theories which are maintained regarding hyperthyroidism and the removal of thyroid tissue for its relief.

Mackenzie is quoted as saying that if it were certain that the cause of the disease is hypertrophy and overactivity of the thyroid gland, removal of the gland would be the most rational treatment.

McGarrison maintains that Graves' disease is not essentially due to thyroid gland activity.

Farrant says that if hyperthyroidism were recognized and treated from one to three years earlier, Graves' disease would cease to exist.

Kocher, the Mayos, Crile and the author believe that the disease can be practically cured by removal of sufficient thyroid tissue when there has not been visceral degeneration, and that it can be greatly ameliorated in cases when this has occurred.

The author also says that while the cause of Graves' disease is yet not known, it cannot be denied that the disease is a manifestation of excessive and disordered functional activity of the thyroid glands. By removal of a sufficient amount of the gland, its hypersecreting action is overcome. Sufficient gland tissue can be left to continue the physiological requirements of the body.

The author was converted to the surgical treatment of exophthalmic goiter eleven years ago. He had had six cases under observation. They were treated medically with no benefit. One case was operated upon and the right lobe was removed. The patient made a remarkable recovery. The other five were immediately operated upon with good results. All these cases were operated upon under local anæsthesia. The author later became convinced that if sufficient gland tissue is removed, the symptoms disappear and the patient is restored to health.

Kocher is quoted as saying in 1907 that it is rarely necessary to resect a part of the remaining gland after excision of one side, and he has cured 83 per cent of all his cases. The author did not find this true in his practice. While the patients showed general improvement and an amelioration of all symptoms resulted, they were not definitely cured. It was found necessary in some cases to remove sufficient gland tissue to place the patient on an "industrial" plane.

The author is of the opinion that it is hardly possible to estimate the size of the gland during the operation, since the gland does not permit free exploration, being anatomically so situated that its proportions cannot be definitely determined. It was found that after removal of one lobe, symptoms would still persist indicating toxic absorption. It then became necessary to perform a second operation to relieve the remaining symptoms. In one case where two operations were performed and the patient made a fairly good recovery, there was nevertheless a remaining tremor and a rapidity of the heart. She was again operated upon and a portion of gland tissue removed from behind the trachea: this tongue-like process from the middle lobe was previously described by the author.

In conclusion, the author states that he has always found the removal of one lobe and the isthmus sufficient to give unquestionable improvement. The removal of rather more than half the remaining lobe almost always places a patient in a state of health which enables her to work and play and to feel well while doing so. Occasionally a third operation is necessary.

The author cites several interesting and instructive cases demonstrating unusual symptoms of emaciation, extreme proptosis, and marked disability.

M. A. BERNSTEIN.

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Gask, G. E., and Wilkinson, K. D.: Penetrating Gunshot Wounds of the Chest and Their Treatment. *Brit. M. J.*, 1917, ii, 781.

This paper is concerned especially with the treatment and cause of death of 365 cases of chest injuries, covering a period of eighty-five days, of different phases of warfare. All cases of penetrating wounds of the chest coming to the casualty clearing station are included, no matter how serious the complication. The cases have been followed to the base or to England, so that base mortality is included.

Disregarding complicating wounds, the causes of death are classified as follows: (1) death in a few hours from very extensive and severe injuries which can seldom be aided surgically; (2) death in the casualty clearing station after a few days, usually from local sepsis; (3) death at the base from sepsis. Prolonged illness is also almost always due to sepsis. Treatment should therefore be directed toward elimination of infection in chest wounds, as in any other wound.

The infection is carried in by the missile, cloth and splinters of bone, by air sucked in, or by extension in an open wound. If there is a large open wound through which air is sucked, immediate temporary skin suture is attempted without anæsthesia. All other cases are allowed to rest for one or two hours to recover from shock. The patient is then examined and if the missile is retained, an X-ray is taken.

The indications for early operation are: (1) a ragged wound of the soft parts; (2) compound fracture of the ribs; (3) bleeding from a parietal wound; (4) suction of air into the pleural cavity; (5) retention of a large foreign body in an accessible position; (6) pain, often from splinters of a rib scratching the lung; (7) rapidly increasing hæmothorax complicating pneumothorax.

Small clean wounds, including those with small retained missiles, are treated on general medical principles. Hæmothorax, if large, is aspirated. If clinical signs of infection develop, i.e., rising pulse, fever, increase in effusion or pneumothorax, a sample of blood is removed for bacteriologic examination. Cyanosis is treated by the inhalation of oxygen for five or ten minutes every half hour. "Valve pneumothorax" is treated by early suture. Surgical emphysema, often present, requires no treatment. Air in the anterior mediastinum may cause an absence of precordial murmurs which may closely simulate pericarditis. Massive collapse of one lobe of the lung without known cause may occur.

Operation is performed as soon as possible after recovery from shock. Wounds of the soft parts, unless perfectly clean, are excised. Splinters of bone are removed and sharp edges of bone trimmed. The chest is closed in layers. If part of the pleura is missing, muscle is used to bridge the gap, or if necessary, a skin flap from elsewhere. The chest must be closed.

Foreign bodies, not including rifle balls, are usually shell fragments one inch by one and one-half, as a rule associated with pieces of rib and clothing. The choice of route for the removal of a foreign body depends on its position relative to the wound of entry. When possible, thoracotomy through the wound is preferred or by fresh intercostal thoracotomy or with removal of the rib. The easiest route is probably the fifth rib in mid- or anterior axillary line. If the foreign body is not visible, the hand is introduced to feel for it. Lung tissue is incised and sutured as necessary. The blood of a hæmothorax is evacuated. Bleeding does not recur even as early as twelve hours after injury.

Repair of the diaphragm is best done from above, then any necessary repair of an injury to hollow viscera is executed from below. With multiple injuries of the chest and abdomen, it is probably better to deal with the abdomen first, but the chest should if possible be attended to at the same operation.

Infected hæmothorax can be prevented in some cases by careful excision of the wound. Infection with anaerobic bacilli is the most benign, mixed infection is always severe, streptococcic, especially if hæmolytic, is most dangerous. A diagnosis of infection is rarely made before the third day. The only positive evidence is a foul-smelling fluid and positive cultures. Clinical signs may appear before a culture can be obtained from the fluid. Treatment calls for ample incision, washing the cavity with eusol, then closing the chest in layers. If closure is effected, it may remain closed and become sterile. The lung expands and adhesions form to hold it out. Respiratory distress is also much less. If infection persists, as determined by postoperative examination, it should be opened and drained.

Any patient on whom an intrathoracic operation is to be performed should have general anæsthesia. Chloroform is generally used in these cases.

Contra-indications to operation are: (1) shock and collapse, if persistent and marked; (2) small, clean wounds without evidence of serious injury; (3) retention of a small body in the lung or mediastinum; (4) collapse of the opposite lung as indicated by inspiratory retraction of the chest wall on the other side.

The usual operative technique is a six-inch incision over the wound or at a site more favorable, with the resection of four inches of rib. An alternate method is intercostal incision with a rib spreader. The pleural cavity is palpated and cleansed by inserting the whole hand. The wound in the lung is next explored and the wound sutured. If necessary, a wedge of lung tissue is first excised.

The total number of cases was 365 and of these 76, or 20.8 per cent, died and 289 recovered

Deaths from complications of the chest wounds were as follows: head, 6; abdomen, 14; spine, 4; heart, 4; large systemic vessels, 2; multiple wounds, 14; lethal gas, 1; making a total of 45 cases.

Causes of death from chest injuries were as follows: shock and hæmorrhage, 19; sepsis, 10; bronchitis, 2; making a total of 31 cases or 9.6 per cent.

General results may be summarized as follows: There were 104 cases operated upon, of which 83 recovered and 21 or 20.2 per cent died. The number of cases not operated upon were 261, of which 206 recovered and 55 or 21.07 per cent died

C. A. HEDBLOM.

Hathaway, F. J.: The Early Operative Treatment of Penetrating Gunshot Wounds of the Chest. *Brit. M. J.*, 1917, ii, 582.

Prompt recognition of suitable cases and early operation in chest injuries saves many lives and shortens convalescence. Clean through and through wounds caused by rifle bullet or shrapnel may require aspiration of the hæmothorax but not early operation. Large exit wounds caused by such missiles striking bone should be sewn up if possible, after removing all loose fragments and excising the wound edges. Tangential wounds with fragments of rib and pleura driven into the pleura, lung, and sometimes penetrating the diaphragm must be cleared of damaged tissue, cleansed, and the diaphragm closed. Damaged tissues in large through and through wounds caused by shrapnel or high explosives must be excised and the wounds closed if possible by sutures. Rifle bullets or shrapnel balls retained in the chest may be left unless sepsis ensues. Large jagged pieces of shell causing much laceration and carrying in fragments of clothing must be excised if accessible.

Accurate X-ray localization is essential. Novocaine is the best anæsthetic. No intratracheal pressure apparatus is necessary. Wide exposure is essential. If there is already a large opening with pneumothorax, the hand is introduced and the foreign body removed. If the opening in the pleura is small with but little sucking of air, a small incision is made and the lung grasped with toothed forceps and pulled into the incision. The hæmothorax can then be evacuated and any metal fragments seen or felt can be removed. If imbedded in the lung, the track of the missile is followed up with a knife or cautery, or the finger is inserted. Any hæmorrhage is controlled, and the wound in the lung, if large, is sutured. The pleural cavity is washed out with Dakin's solution or flavine. If possible, the pleura is then completely closed, leaving any infection "to be dealt with by the natural power of the pleura to dispose of infection," which has been shown to be very strong. If there is a gap in the parietal pleura it may be stitched to the lung and visceral pleura. Where skin edges cannot be brought together, the wound is firmly packed.

"In general treatment of wounds of the chest follows the same line as those of the abdomen, head, knee, or other joints; they require just as early operation and it will be found that results are just as good."

C. A. HEDBLOM.

Rosini, L.: Cancer of the Male Breast (Canero della mammella dell' uomo). *Gazz. med. di Roma*, 1917, xliii, 261.

Rosini reports a case of carcinoma of the breast in a man forty years old. Examination showed the left breast increased to the size of a small melon. The skin showed large veins radiating from the mammary areola. The tumor was only slightly mobile, hard on palpation, but fluctuant in a point toward the apex about the size of a 5 centesimi piece. The surface of the skin here was bluish in color. Two hard glands were noted in the axilla. There was a bloody discharge from the nipple. The symptoms and the history of the case suggested carcinoma and radical removal was done.

Microscopic examination of the tumor showed infiltrated epithelial cords in the atrophied acini of the mammary gland and the presence of fibrous connective tissue with numerous epithelial columns in the lymphatic spaces. The man remained well for some months, but died with the phenomena of

pulmonary metastases. The author thinks it is probable that this case originated in a slight trauma. Tricomi found that among 751 tumors of the male breast, 649 were carcinomata. W. A. BRENNAN.

Fay, O. J.: Traumatic Injuries to the Thoracic Duct. *Interst. M. J.*, 1917, xxiv, 1055.

Reviewing the literature of this subject, the author takes up the mechanism of the injuries, their site and character, symptomatology, diagnosis, prognosis, and treatment by suture, implantation, ligation, tamponing, and acupressure.

Regarding treatment, suture of the duct is the procedure of choice. Where suture is impossible, the duct should be ligated, or clamped with forceps. Where neither of these procedures can be successfully carried out, because of the general condition of the patient or the difficulty encountered in locating the injury to the duct, the wound should be firmly tamponed.

In the treatment of injuries to the duct within the thorax, exposure with suture or ligation of the duct is impracticable; conservative treatment is a matter not of choice but of necessity. The first aspiration usually precedes diagnosis, whether it be undertaken purely for diagnostic purposes, or for the relief of dyspnœa and other distressing symptoms of an intrathoracic effusion. Repeated aspirations are necessary whenever this increased pressure threatens life, but only then, for following aspiration the fluid is usually replaced with great rapidity, the negative pressure within the thorax favoring its escape; and the body is thus deprived of an economically valuable fluid, capable of being absorbed, without any compensating mechanical relief. It may also be assumed that the pressure exerted by the escaped fluid upon the thoracic duct serves in some measure as a tampon, thus favoring the development of a collateral circulation below the point of injury.

To combat the loss of nutrient chyle, the patient's strength must be maintained by generous feeding.

P. G. SKILLERN, JR.

Larralde, A.: One Thousand Applications of Artificial Pneumothorax (Un millar de applicationes del pneumotorax artificial). *Gac. méd. de Caráeas*, 1917, xxiv, 170.

Larralde gives his personal experience with the Forlalini method of artificial pneumothorax since March, 1914. He made a thousand insufflations in about one hundred patients.

The indications for pneumothorax are chiefly two: (1) in acute forms such as those of caseous, fibrocaseous, ulcerous, cavitary, caseous pneumonia and tuberculous bronchopneumonia; (2) in pulmonary hæmorrhages. It is contra-indicated in hyperacute generalized forms and in bilateral lesions.

Radiography should be used: (1) before applying pneumothorax to know if it is indicated, and to show where the puncture should be made; (2) to follow the progress of the pneumothorax and to fix the time of renewing insufflations; (3) to diagnose pleural adhesions.

Of the 100 patients treated by Larralde, 68 have been followed. In all cases where pneumothorax has been applied for hæmoptysis the result has invariably been gratifying. When the insufflation was sufficient, hæmorrhage ceased immediately. When adhesions caused difficulty in the penetration of the gas, the insufflation was repeated about four hours later. The second administration is generally easier and permits a larger amount of gas to be introduced.

In all cases of tuberculosis, pneumothorax has always been effective in acting upon the fever, digestive disturbances and the general state, when the quantity of gas introduced has been sufficient to cause compression.

Of the 68 cases followed, 18 have been for two and one-half years without any symptoms of the recurrence of the disease. Eighteen cases have shown improvement; 4 cases have been without result. In 20 cases it was impossible to realize the pneumothorax, or useless to continue it owing to the patient's state. In 8 cases there was a prolongation of life, but the patient ultimately died from the disease. In all these cases the patient had derived no benefit from hygienic and medical treatment.

The author gives his opinion that there is no other method which in acute febrile progressive infiltrating and cavernous tuberculosis can give such results as those indicated; and he therefore thinks that the Forlalini method is the most effective method available for the treatment of pulmonary tuberculosis. W. A. BRENNAN.

Péhu and Daguet: Clinical and Radioscopic Researches on the Remote Sequelæ of Pleural Effusions, Traumatic or Spontaneous (Recherches cliniques et radioscopicues sur les sequélles lontaines des épanchements pleuraux traumatiques et spontanés). *Ann. de méd.*, Par., 1917, iv, 428.

Very little work has been done in the radiologic study of the end-results of pleural effusions, especially traumatic. During the war the authors had occasion to observe and study both spontaneous and traumatic effusions, and they desire especially to make comparisons between the different varieties.

Altogether the authors studied 152 cases of pleural effusions by radioscopy. These were cases of hæmothorax or purulent pleurisy due to penetrating war wounds of the chest, emphysema consecutive to acute lobar pneumonia, or spontaneous serofibrinous pleurisies of almost certain tubercular nature. They desired to ascertain what traces of the condition remained in the pleura or in the lung after a considerable interval varying from a few months to a few years, the effusion having ceased to evolve. The conclusions to which the study of their cases led them are thus formulated:

1. Simple hæmothorax due to war wounds, which have not suppurated, leaves in general no persistent traces either on the pleura, on the diaphragm, or on the lung. Extensive hæmothorax, however, which has persisted despite several punctures, may in undergoing organization after the manner of hæmatomata of the dura mater produce extensive adhesions between the two folds of the pleura; but this is exceptional.

2. Cases of purulent pleurisy consecutive to pyothorax after penetrating wounds of the chest, even if accompanied by prolonged or fistulous suppuration, leave behind a condition of limited adhesions between the pleural folds, such adhesions as a rule gradually becoming attenuated. It must however be observed that if intervention is carried out early and the site of incision well chosen the pleural cicatrix will be less extensive. The same applies to purulent pleurisy consecutive to acute lobar pneumonia.

3. Spontaneous serofibrinous pleurisy of tubercular origin, either alone or associated with pulmonary lesions, leaves behind extensive adhesions which are sometimes generalized over the entire surface, and which disappear very slowly. Their persistence is much greater than the previous variety.

4. The existence of these various kinds of adhesions may be clinically manifested. By radioscopy alone their extent and their influence on the respiratory function can be demonstrated.

Of the 152 cases reported 108 were spontaneous pleurisies of tubercular nature, 3 were metapneumonic purulent pleurisies, and 41 were traumatic pleural effusions. W. A. BRENNAN.

TRACHEA AND LUNGS

McCannel, A. D.: Bronchoscopy and Œsophagoscopy. *J.-Lancet*, 1917, xxxvii, 704.

The instruments in use today for bronchoscopy and œsophagoscopy are of two kinds: those without lighting apparatus, the light being projected from without into a tube; and those in which the light is part of the instrument; the latter are preferable. Bronchoscopy and œsophagoscopy are done for diagnostic and therapeutic purposes, usually under cocaine anæsthesia in adults and preferably under general anæsthesia in small children.

The diagnosis of a foreign body in the air passage usually depends on the symptoms of cough, usually paroxysmal and constant, dyspnœa, usually inspiratory but sometimes expiratory or both, and always worse during paroxysms of coughing, elevation of temperature from irration and later from septic absorption from a localized inflammatory area or from such complications as pneumonia. Pain is often noted but is apt to be vaguely localized.

X-ray examination is of great value if the foreign body shows opacity to the ray. Physical signs if present are valuable often in indicating the side the foreign body is on, especially in the case of negative roentgenograms. H. H. FREILICH.

Olivier, R.: Fifteen Late Extractions of Intrapulmonary Projectiles (A propos de quinze extractions de projectiles intra-pulmonaires chez d'anciens blessés). *Bull. et mém. Soc. de chir. de Par.*, 1917, xliii, 2080.

In the 15 cases operated upon by Olivier the extraction was made at least five months after wounding. Local anæsthesia was employed in all cases. Three of the cases were operated upon by the Duval method by the transpleural route with pneumothorax. Two of these cases recovered only after a purulent pleurisy, and the third after a serous pleurisy. The author thinks this method should be accepted only as a necessity where a wide field of vision is indispensable. Marion's method has been employed in 8 cases. In this the projectile is directly extracted after a prior fixation of the lung to the thoracic wall. All these patients recovered in from ten to fifteen days. In a few cases Olivier employed the method of Petit de la Villeon, in which the extraction is made by the forceps under radiologic control. This method is rapid and less bloody than others, as the muscular and bony tissues are scarcely involved, surgically speaking.

For projectiles situated in the hilum region, Duval's method is applicable. For projectiles outside the hilum region and accompanied by suppuration, hæmoptysis, abscess, etc., Marion's fixation method should be employed. Petit de la Villeon's procedure is excellent on condition that the hilum is not approached and that there is neither inflammation of the lung, hæmoptysis, nor pus in the sputum.

As regards the end-results, the first two methods showed always the existence of pleural reaction even when the postoperative course was apparently otherwise excellent. Such reaction may be demonstrated radiographically by marked obscurity of the pleural cul-de-sacs and immobility of the corresponding hemidiaphragm. Such end-results are entirely lacking when Petit de la Villeon's method is followed, and this method has therefore in this respect great superioity over the others.

W. A. BRENNAN.

HEART AND VASCULAR SYSTEM

Escande, F., and Brocq, P.: Two Cases of Projectiles Well Tolerated in the Walls of the Heart (Deux cas de projectiles inclus dans les parois du coeur et bien tolérés). *Rev. de chir.*, Par., 1917, lii, 268.

The author reports two cases of projectiles found lodged in the wall of the heart and well tolerated. In one case the projectile, a rifle bullet, was radiologically fixed in the lower narrow part of the

left ventricle. In the second case a fragment of shell was similarly demonstrated in the anterior wall of the heart.

Since the beginning of the war 14 cases of this kind have been published. In 7 of these the projectile was lodged in the heart wall and in 7 it was more or less free in a cavity. In 5 of these 14 cases the tolerance was almost perfect. Seven were operated upon, of which 4 recovered and 3 died after operation. In one case there was later migration with recovery; one died without intervention.

In 1899 Loison collected 14 cases of foreign bodies in the heart. In all these cases, with one exception, death followed rapidly. Judging from the number of cases which show after a long interval that the heart can tolerate the presence of a foreign body, the author shares the opinion of Delbet and Walter that in such cases abstention from operation should be the rule. W. A. BRENNAN.

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Roedelius, E.: The Postoperative Treatment of Diffuse Peritonitis. *Deutsche med. Wchnschr.*, 1917, xliii, No. 10.

The author thinks that no surgical disease calls for such skillful and prudent treatment as diffuse peritonitis, especially postoperative. He gives a detailed description of the various measures observed in his practice, which in general are an elaboration of the fundamental principles of the surgical treatment of peritonitis, namely, occlusion of the source of infection, emptying of existing pus, and providing an outlet for that which forms. The further treatment apart from the wound consists in the prevention of toxic weakening of the heart and of pulmonary complications and the dangers which threaten the gastro-intestinal tract.

Among the various means used by Roedelius may be mentioned lavage according to Rehn's method; systematic intravenous infusion of saline solution during operation, adding adrenalin or digitalin. After operation the patient is wrapped in warm coverings; nothing is given by mouth during the first fifteen hours; then cold tea, not iced, is given every half hour; sufficient nourishment is introduced subcutaneously, intravenously or per rectum, so as to obviate vomiting; catheterization is done after twelve or eighteen hours if the patient has not urinated spontaneously; morphine combined with atropine is used during the early days when necessary.

The author describes his method of draining the wound; he has never seen visceral prolapse. He sees no advantage in the so-called open treatment of wounds. When the patient is able to stand, a flannel band is fixed around the abdomen. Such a bandage does not prevent hernia, but the author has not generally found that they occur. But in any case he does not operate upon a postoperative hernia till from nine to twelve months have passed. Other procedures adopted by the author are abdominal massage, application of heat to the abdomen, rectal glycerine injections, etc.

W. A. BRENNAN.

Vargas, M.: Peri-Umbilical Cutaneous Agenesia; Appendicectomy Twelve Hours After Birth; Recovery (Agenesia cutanea periumbilical; apendicectomia practicada doce horas despues del nacimento; curacion). *Siglo mêd.*, Madrid, 1917, lxiv, 870.

The infant reported showed a malformation described by Ballantyne as gastroterata or gastroschisis, in which the abdominal wall is lacking and the viscera contained in the cavity herniate. The umbilical and peri-umbilical regions were covered, not by skin as normally, but by a whitish gelatinous substance identical with that forming the umbilical cord. There was no other malformation.

The infant was brought to the author's clinic twelve hours after birth. Vargas proceeded to operate immediately after making sure of hæmostasis in the umbilical cord. He attempted to draw the skin edges together over the defect by sutures without disturbing the gelatinous covering, but after tying several sutures a rupture occurred and the intestinal organs herniated. The author had much difficulty in reducing them and was obliged to cut his previous stitches. The herniated intestine revealed the appendix 3 cm. long; in accordance with his usual rule to remove a presenting appendix, appendicectomy was done and the stump invaginated. The author then replaced the organs in the cavity, cut away the gelatinous abdominal covering and proceeded to suture. The peritoneum was first sutured, then the muscular and cutaneous coats drawn together, leaving a cicatrix 7 cm. long. The operation was performed under chloroform and ether narcosis. After ten days the child was in normal condition.

The author gives a historical sketch of congenital malformation of this type. Ballantyne mentions only 16, but the author has himself seen 5, of which he gives short descriptions. These include the present case. One other case in which he operated resulted successfully, although the child succumbed later to bronchopneumonia. The only treatment is immediate operation. Kocher has published a list of 24 operated cases with recovery.

The author remarks that this is the only reported

case of a successful appendicectomy in an infant so young. Hallet has published a list of 58 cases in which infants were operated upon within thirty-six hours of birth, 15 deaths resulting.

W. A. BRENNAN.

Veau: Hernia and Appendicitis in the Child (Hernies et appendicite chez l'enfant). *Bull. méd.*, Par., 1917, xxviii, 492.

Veau has found so many cases of concomitant appendicitis in children with inguinal hernia that he now systematically examines the appendix in such cases. Where both are found to co-exist, the question arises as to what operative technique ought to be followed.

In 30 cases Veau did the double operation and in 12 he removed the appendix through the hernial incision. This latter method has inconveniences, as the appendix is difficult to reach. Veau has abandoned it except in children above four years old, because the appendix is then easily reached and removed.

In many of his cases Veau found adhesions between the appendix and the herniated intestinal loop.

W. A. BRENNAN.

Murray, L. M., and Morgan, J. D.: Diaphragmatic Hernia; with Report of a Case of the So-Called Acquired Condition. *Lancet*, Lond., 1917, cxciii, 857.

The case reported is of a Canadian private serving in the British army, who was completely buried by the caving in of a trench, following the explosion of a shell. When he was dug out, he complained of severe pain which was referred to the region of the eighth and ninth vertebræ. The diagnosis of hæmothorax was made.

Examination, however, revealed the following signs and symptoms which led to the diagnosis of diaphragmatic hernia. Sudden exertion caused marked dyspnœa; no symptoms were manifested when he was quiet. On percussion of the left lung a dull tympany was elicited, the type differing with various examinations. On auscultation of the same lung in front, below the third rib, a metallic tinkling was heard, a sign which first led the examiner to suspect the presence of the stomach in the left chest. The coin test was present. The heart examination revealed a diastolic murmur at the second right costal cartilage. The intensity of the murmur varied with the position of the patient and also varied on different days. A bismuth meal and X-ray examination was made at the Canadian hospital and the diaphagmatic hernia confirmed.

In commenting upon the subject, the contributors assert that such a hernia may occur either on the right or left side. On the right side it usually consists of a knob of liver tissue. On the left side the contents are nearly always the stomach. Other organs may be carried into this hernial protrusion, such as the intestine, pancreas, kidney, etc. On the other hand, lung tissue may make its way downward through the deficiency in the diaphragm.

Diaphragmatic herniæ may be either congenital or acquired. Many of the congenital cases may show no symptoms during life, until some complications develop such as intestinal obstruction. In the acquired cases, a sudden intra-abdominal pressure will cause a rupture of the diaphragm. The symptoms complained of in almost all of the reported cases have been dyspnœa, pain, or some indefinite gastric complaint.

In conclusion, the important diagnostic symptoms are:

1. Displacement of the heart to the right.
2. A metallic tinkling heard high up in the chest, having relation to the peristaltic movements of the stomach, and not especially corresponding in time to the respiratory movement.
3. Tympany of some degree high up in the left chest.
4. Absence over the left chest of the dull note indicating fluid, or of the hyper-resonant note of pneumothorax.

M. A. BERNSTEIN.

Moschcowitz, A. V.: Epigastric Hernia Without Palpable Swelling. *Ann. Surg.*, Phila., 1917, lxvi, 300.

The term hernia has come to mean a protrusion of a peritoneal sac. In epigastric hernia a peritoneal sac is a rarety. In most cases the bulk of the protruding mass is not omentum but a prolongation of the fat enclosed between the two peritoneal layers forming the falciform ligament of the liver.

Epigastric hernia has a distinct symptom complex; the patients usually complain of eructations, nausea, periodic attacks of pain in the epigastrium which do not bear constant relation to ingestion of food, as is the case in gastric ulcer; yet there is a striking similarity between the symptoms of the two.

Upon physical examination a mass is sometimes palpable in the median line of the abdomen between the umbilicus and the xiphoid appendix. The size, when present, varies greatly; the majority are rarely larger than a marble, while many are no larger than a small pea; and in the obese either are very difficult to palpate. Irreducibility is characteristic of epigastric hernia.

A constant physical sign is tenderness; this is so characteristic that in the very smallest herniæ the diagnosis can be made by finding an extremely tender point in the midline of the abdomen.

Moschcowitz reported two cases which he operated upon that had no palpable mass; but about two inches above the umbilicus there was a very small opening with a vessel emerging and no other protruding mass; ligation of the vessel and closure of the opening resulted in recovery.

F. P. HAMMOND.

Bengolea, A. J.: A New Technique for the Radical Treatment of Umbilical Hernia in the Adult (Sobre una nueva téchnica para la cura radical de las hernias umbilicales en el adulto). *Rev. Asoc. méd. argent.*, Buenos Aires, 1917, xxvii, 409.

Bengolea's treatment of umbilical hernia in the adult is as follows:

1. Incision of the skin and subcutaneous tissues. The incision is transverse, being modified by a curved or double crescentic cut when it is desired to preserve the umbilical cicatrix.

2. Isolation of the sac and closure of the hernial orifice. When there are no intestinal or other adhesions, an extraperitoneal operation is preferred, isolating the sac and closing the hernial orifice with separate non-perforating sutures. When the orifice is large, the sac voluminous and complicated by adhesions, the sac is resected and the orifice closed transversely by sutures in one plane.

3. Utilization of the anterior sheath of the rectus. An elliptical-shaped piece of the anterior rectus sheath is next incised around the hernial orifice, varying in size according to the needs of the case. The outer edges of this are then freed and turned over so as to overlap the hernial orifice, and the edges are united by continuous sutures. This flap gives a reinforcement to the closed hernial orifice. Then the remaining two cut edges of the rectus sheaths are brought together and sutured over the previous sutured layers, giving further reinforcement to the original orifice.

The author has treated ten cases successfully by this technique. W. A. BRENNAN.

GASTRO-INTESTINAL TRACT

Mandel, M., and Gibson, W. S.: Clinical Manifestations and Treatment of Gas Poisoning. *J. Am. M. Ass.*, 1917, lxix, 1970.

The authors discuss the symptomatology and treatment of poisoning by the German "mustard gas."

The symptoms appear between four and sixteen hours after exposure, being ushered in by epigastric pain and vomiting. Later there is a severe conjunctivitis and a persistent cough that is paroxysmal in character and worse at night. The respiratory tract suffers from an irritative, non-febrile inflammation. The exposed parts of the body show burns which, in some instances, are of the second degree.

Bronchopneumonia is the most common complication and sometimes ends fatally from a superimposed pulmonary œdema not of cardiac origin.

In the treatment, the victim should be provided with dry clothes and quarters as soon as possible, as the gas decomposes on exposure to moisture; the symptoms result from the action of the decomposition products. In the severe cases with pulmonary œdema, phlebotomy should be performed. There are no special indications in the treatment of the burns or of the conjunctivitis.

JOHN W. TURNER.

Crohn, B. B., and Reiss, J.: Studies in Fractional Estimations of Stomach Contents. *Am. J. M. Sc.*, 1917, cliv, 857.

In the following studies the authors have attempted to apply the method of fractional estimation of gastric contents to patients suffering from abdominal symptoms and to ascertain to what extent and in what degree pathological processes and abnormal stimuli alter the cycle of digestion, the emptying time of the stomach, the factor of duodenal regurgitation, etc.

Their studies are based upon over 200 curves representing all phases and varieties of abdominal disease. In a large percentage of cases, the clinical diagnosis was confirmed by operation. Throughout, the attempt has been made conscientiously to consider only cases in which the symptoms have been clear-cut and definitely indicative of pathological conditions.

The technique employed has been to require the patient to swallow the Rehfuss tube at 8 a.m., all other food or drink having been proscribed since the evening meal of the previous day. Retching is avoided to the greatest possible degree. The stomach is aspirated in several positions until no further material is obtainable, the amount withdrawn from the fasting stomach varying from nothing to 140 ccm. It rarely happens that nothing is withdrawn. The fasting contents were usually clear, watery, or slightly turbid in appearance. In about one-quarter of the cases bile was present in some amounts, indicating a patent pylorus.

The amounts recovered in this series were as follows: gastric neuroses, 2 to 60 ccm., averaging 31 ccm.; gastric or duodenal ulcer, 20 to 140 ccm., averaging 54 ccm.; cases of chronic appendicitis, 30 ccm. Marked subacidity or achylia cases were either empty or showed at a maximum 10 to 25 ccm.; functional hypersecretion, 50 to 70 ccm. Crohn and Reiss were unable at any time to duplicate the large amounts found by Rehfuss and his co-workers in normal males, or of Fowler and Zentmire in normal or approximately normal females.

Every specimen was titrated for free and total acid, and the resulting amount expressed in cubic centimeters of decinormal sodium hydrate per 100 ccm. of stomach contents. A curve based on the result was then plotted. The appearance of bile in the aspirated fractions was carefully noted. The emptying time of the organ was estimated by the disappearance of the starch reaction as determined by the addition of tincture of iodine in excess of each tube. The presence of mucus was carefully noted; tests were made for rennin and pepsin in cases of anacidity, and the Wolff-Junghans test performed in cases suspected of carcinoma.

The pure gastric neuroses and the so-called normal cases showed free acid at the beginning of the test; maximum total acidity was reached at about one hour. The stomach emptied itself usually in

two or two and one-half hours. No relationship could be traced between the degree of biliary regurgitation and the fall of acidity toward the end of digestion. The presence of mucus has not been constantly proportionate to the fluctuations of acidity or to the fall of acidity at the end of digestion. In cases free from organic or secretory derangements, the height of digestion took place at one hour.

In cases of hyperchlorhydria, the total acidity rose rapidly and higher than in normal cases, although the emptying took place in the usual time. The hyperacidity ranged between 80 and 110 per cent, and often reached 130 and 140 per cent or exceptionally higher.

In cases of hypersecretion, the secretion of gastric juice may continue for hours after the normal period of digestion. In cases of anacidity there was a lack of free hydrochloric acid throughout, though the total acid may have risen to 20 or 30 per cent at some time of the digestion. Ferment strengths were maintained, fasting contents were usually absent or of minimal quantity, and the stomach emptied itself within two hours. In the achylia cases free acid was consistently absent throughout; total acid fluctuated between 8 and 10, or at most 14 per cent. The emptying time was shortened to one and one-half or one and three-fourths hours; ferments were absent.

The authors believe that ulcer cases are associated with a curve of acidity that rises rapidly and is sustained, if not throughout the cycle of digestion, at least to within a short time of its end. A steady prolonged rise and sustained plateau are seen consistently in ulcer cases. Acidity, if it falls at all, does so just before the final emptying of the stomach. A delayed motility was frequently a factor and indicated pyloric involvement. The regurgitation of bile is commonly absent or, when present, takes place at the very last phase of the digestion. The presence of mucus was not associated with ulcer. Blood was absent throughout. Very little trauma was associated with this method of the test meal, and the presence of blood had therefore all the more significance. The highest acidity in these cases took place in from one and three-fourths to three hours after giving the test breakfast. Cholelithiasis and chronic appendicitis curves have not been differentiated by the authors from those of ulcer cases.

In posterior gastro-enterostomy cases, the curves were characterized by a drop in the acidity which took place at the end of the first hour. This drop was associated with regurgitation of intestinal contents and was followed by a secondary rise of acid. The regurgitation of intestinal contents once begun continued to the end of digestion.

In cases of cancer, the curves are those of marked subacidity and occasionally of anacidity. The gastric ferments rennin and pepsin were retained in all the cases. Blood was a very common occurrence toward the end of digestion. Mucus was frequently abundant. The authors were unable to draw diagnostic conclusions from estimates of soluble albumin performed by the Wolff-Junghans method.

They conclude that the following information may be gained from the estimation of stomach contents by the utilization of this method: (1) regarding fasting contents, the amount, presence of food residue, presence of regurgitated bile, mucus, or blood; (2) the type of secretory activity as regards free and total acid, i.e., the acid curve; (3) the duration of secretory activity, whether ceasing with the exit of the food or maintained as a hypersecretion thereafter; (4) the time of emptying of the stomach, i.e., its motility; (5) the presence of mucus and time of occurrence; (6) the presence of bile as indicative of pyloric relaxation and duodenal regurgitation.

While this method does not give a finished diagnosis, it gives a number of facts which, when properly interpreted, may be recognized and indicated as functional disturbance of the stomach associated with a particular disease. A disadvantage of the method is the time required for its completion.

E. C. Robitshek.

Balfour, D. C.: Restoration of Gastro-Intestinal Continuity by Means of Anticolic Gastrojejunostomy Following Partial Gastrectomy for Cancer of the Pyloric End of the Stomach. *Surg., Gynec. & Obst.*, 1917, xxv, 473.

The resection is carried out in the ordinary manner with especial attention to such important points as the wide removal of gland-bearing tissue, the avoidance of injury to the middle colic blood supply of the transverse colon, the resection made well beyond the cancer limits, the cauterization of all cut mucous surfaces to prevent cancer-cell transplantation, and the secure inversion and burial of the duodenal stump. The operative field is inspected and carefully isolated by fresh packs. The second stage is carried out as follows:

The first loop of jejunum is procured and a point about 14 to 18 inches from the duodenojejunal angle is marked. The jejunum is then carried up in front of the transverse colon and omentum and a segment of suitable size is chosen at the point already marked. This section of jejunum is lightly grasped with rubber-covered forceps and directed so that the proximal end of the loop will be approximated to the lesser curvature of the stomach. A series of interrupted silk sutures in the serosa is used for the first line posteriorly, beginning at the greater curvature. All these sutures are placed before any are tied, and the ends of the top and bottom sutures may be conveniently left as guides.

The first suture line is about half an inch below the clamp on the cut end of the stomach, and on the side of the jejunum about three-fourths of an inch from the summit of the loop. The jejunum is now incised on the line and the crushing clamp removed from the stomach. Any actively bleeding vessels are ligated. The posterior row of the anastomosis

uniting the posterior wall of the stomach to the inner cut edge of the jejunum is of chromic catgut. The stitches on the gastric side should be taken after the edge which has been crushed by the clamp has been trimmed with the scissors. A second row of finer catgut may be used to advantage in the posterior line. The first chromic catgut suture is continued in front in the usual way to complete the closure. An interrupted silk suture line similar to that used posteriorly is placed anteriorly, particular care being taken to reinforce the angle of anastomosis at the lesser curvature. A few interrupted silk sutures are placed where necessary further to protect the anterior suture line and the suture at the lesser curvature, the stump of gastrohepatic omentum which contains the ligated gastric artery being utilized as a support to the gastrojejunal angle at this point.

That the operation is of less risk than other methods is very definitely shown by the operative mortality statistics. From January, 1907, to August 16, 1917, in 318 resections by the Billroth No. 2 method, there was an operative mortality of 13.2 per cent; in 104 cases by the Polya method, a mortality of 14.4 per cent, while in 38 cases with the method described the mortality was only 5.2 per cent. This comparison of operative mortality is quite fair inasmuch as the operations were done by the same surgeons in the same clinic with similar surgical indications. EDWARD L. CORNELL.

Cole, L. G.: The X-Ray in Peptic Ulcer. *N. Y. St. J. Med.*, 1917, xvii, 542.

By peptic ulcer the author means not only ulcer in the stomach proper but also in the first or ascending portion of the duodenum. Morphologically the entire thickness of the wall is involved either by ulceration or surrounding induration, and there may be in addition cicatricial contraction or adhesions to adjoining viscera. Gross deformities, such as are produced by advanced lesions, are so easily recognizable by the roentgen method that mere mention is made of them.

Regarding the small round ulcer with the superficial crater in its early stage, the author maintains that it should be just as accurately detected and diagnosed as the gross lesion. To quote him: "The small early ulcer can be diagnosed with as great a degree of accuracy by serial roentgenography as a fracture of the long bones can be diagnosed in a plain roentgenogram." He states that the carcinomatous ulcer can be diagnosed just as accurately as the other types.

Diagnoses made on the basis of symptoms and laboratory findings alone can hardly be used to base statistics upon relative to the results of treatment. These should be founded on absolute facts as revealed by the roentgen ray or surgery, and ultimate results checked up by re-examination. This method is not used by some surgeons and most gastro-enterologists to the extent it deserves to be.

ADOLPH HARTUNG.

Deaver, J. B.: Peptic Ulcer. *N. Y. St. J. Med.*, 1917, xvii, 529.

Peptic ulcer is an ulcer of that portion of the gastro-intestinal tract in which gastric juice is normally found. Peptic ulcers may be acute or chronic and either type may be present without giving rise to symptoms, but are always a menace since they may give as much trouble as when symptoms are constantly present.

There is no parallelism between the gross character of ulcer and the symptoms to which it gives rise, as the symptoms in respect to origin fall in four groups, as follows: (1) symptoms due to infection; (2) symptoms due to disturbed function; (3) symptoms due to hæmorrhage; (4) symptoms due to perforation.

Deaver believes in the large majority of cases ulcer is due to secondary infection, most frequently from the appendix or gall-bladder. Because of this he examines these organs, likewise the pancreas, and if their appearance is suspicious, he removes the appendix and if necessary the gall-bladder at operation.

The types of ulcer most frequently observed by the surgeon are the chronic non-perforating and the acute perforating. Of the latter Deaver has had about 12 to 20 per cent. The frequency of chronic ulcer has been three in the duodenum to one in the stomach.

For diagnosis he relies on careful history, periodicity of attacks with remissions, relief on taking food, and as less characteristic, gas eructations, nausea, vomiting and hæmorrhage. Of the laboratory methods he favors the stomach tube most. He uses both the test meal and motor meal analysis. He also outlines the stomach by inflation with air and by filling with water.

Positive X-ray findings are of value; negative findings are not so reliable.

Differentiating peptic ulcer from appendicitis, in appendicitis there is discomfort even during periods of remission from acute pain; the pain is not so severe and radiates downward. There is tenderness evidenced on deep palpation over the appendix.

Differentiating it from gall-stones, the pain in gall-stones is colic-like, sudden in its onset and subsidence.

The pain in chronic pancreatitis has no relation to the food intake.

The time relation of pain to the taking of food is of importance in differentiating stomach and duodenal ulcer.

The operation of choice is excision of the ulcer, followed by posterior gastro-enterostomy only when the mechanism of the stomach has been left defective by excision.

Posterior gastro-enterostomy alone is only of value when the ulcer is situated in the pylorus and causes obstruction; and in this case Deaver favors pylorectomy.

It has been his practice in every case of operation

for peptic ulcer to remove the appendix and to examine the gall-bladder and remove it if any signs of pathology are presented. I. E. BISHKOW.

Finney, J. M. T., and Friedenwald, J.: Gastric Polyposis. *Am. J. M. Sc.*, 1917, cliv, 683.

The author reports two cases of gastric polyposis. The first case presented symptoms of anæmia, absence of hydrochloric acid in the gastric contents, a large filling defect on the greater curvature near the pylorus, and blood in the stool and stomach content. A diagnosis was made of gastric carcinoma, which proved on operation to be a papilladenoma with malignant degeneration. Excision of this was followed by a continuance of the anæmia and melæna. A second operation revealed a mass posterior to the duodenum, so definitely malignant and adherent that removal was inadvisable.

The second case presented definite findings, on test meal and roentgen ray examination, of annular pyloric carcinoma with retention. Operation revealed a papillomatous pyloric mass. Excision of this region and posterior gastro-enterostomy resulted in recovery.

Chronic gastritis is cited as the chief factor in the production of gastric papilladenomata. Males over forty are predisposed. They usually are pyloric, and may be pedunculated or broad-based. Their gross and histologic formation depends upon the portion of the glandular area that is rendered hypertrophic or hyperplastic.

The microscopic picture is given in detail.

These polypi are usually benign, and may be devoid of symptoms for a long time, or may have severe symptoms.

The finding of polypi on lavage, the characteristic picture by X-ray, and the constant presence of free blood in the gastric content, combined with achylia gastrica, are important diagnostic factors.

V. E. DUDMAN.

Triollet, L.: The Treatment of Gastro-Intestinal Hæmorrhages of the Newborn (Du traitement des hémorragies gastro-intestinales du nouveanné). *Arch. mens. d'obst. et de gynéc.*, Par., 1917, v, 354.

The author makes a subcutaneous injection in the scapular region of 20 ccm. of sterilized gelatinous serum. This is renewed each day that hæmorrhage occurs. One to two grains of calcium chloride is given each twenty-four hours. This quantity is made into a potion of 1:50 and administered every two hours.

The treatment is continued while the hæmorrhage persists, but the calcium chloride may be continued one or two days longer. Alimentation is restricted during the crises, the thirst only being relieved. The infant is kept warm in a room at constant temperature. Six cases treated at the Tarnier Clinic in this way by the author have given permanent recoveries. Other methods have been abandoned. Sterilization prevents the complications which were formerly observed in the use of gelatinous serum. W. A. BRENNAN.

Saphir, J. F.: Quinine and Urea Hydrochloride. *N. Y. M. J.*, 1917, cvi, 1161.

Local anæsthesia is desirable in rectal ailments because of the fact that many needed operations would thus be performed that would be deferred if general anæsthesia were suggested. This form of anæsthesia is indicated particularly in: (1) patients suffering from pulmonary, nephritic, or cardiac diseases; (2) patients who are not in good condition because of neglect of a devitalizing operative condition; (3) patients to whom time is an important factor because of business or social demands; and (4) patients who fear to take a general anæsthetic.

Many substances have been used as local anæsthetics, including cocaine in solutions of varying strength, beta-eucaine, stovaine, novocaine, alypin, chloretone, and even salt solution, and sterile water. Each of the above has certain objectionable features, the one in common being the peculiar toxicity that is evident when any of these local anæsthetics are used in the rectal region. This feature is avoided by the use of quinine and urea hydrochloride. The author gives specific directions as to the preparation of this substance.

The advantages of quinine and urea hydrochloride as a local anæsthetic are: (1) its non-toxicity when given in unlimited doses; (2) its prolonged anæsthetic effect, lasting from three days to two weeks, dependent upon the strength of solution used; and (3) the fact that a fibrinous exudate outpours in the tissues immediately following injection, this exudate serving as a hæmostatic agent. This last action lasts from three to ten days, which is a very apparent advantage over the transient hæmostatic action of adrenalin.

The chief objection advanced against the use of this local anæsthetic, namely, delayed union or sloughing, has been occasioned by use of too strong a solution. This is obviated by using 0.125 per cent to 0.5 per cent, and no higher. However, in certain conditions, as in ulcerative hæmorrhoids, a high per cent solution is desirable because of increased hæmostatic action.

The author recommends a syringe of his own device for this type of anæsthesia. He advises against elaborate local preparation or previous catharsis, maintaining that much of the postoperative pain following operative procedures in this region results from purging and from too violent sphincter dilatation, or rough drainage.

He warns against the use of local anæsthesia unless the operator has accurate knowledge of what is to be done.

For thrombotic hæmorrhoids, injection of the clot-bearing area and complete excision can be accomplished without inconvenience to the patient.

External hæmorrhoids are treated in a similar manner, no suture being necessary.

This anæsthetic can be used in correcting internal hæmorrhoids, a 0.5 per cent solution being used and the tissues thoroughly injected before

being handled. By this means, dilatation of the sphincter can be avoided, and the patient need not be confined to bed. It is also unnecessary to administer opium, as the bowels are permitted to move the following day.

The author cautions against ligating several hæmorrhoids in the same plane because of danger of stricture; and condemns the use of anal plugs in the form of gauze drains. He does not favor the use of the clamp and cautery, nor the Whitehead operation.

For relief of fissura ani, as opposed to divulsion or stretching of the sphincter, he advises the use of a local anæsthetic of a 0.5 per cent solution of quinine-urea hydrochloride, and division of the sphincter.

He summarizes the advantages of quinine-urea as follows: (1) the lack of pain at time of operation; (2) the duration of three to ten days following operation; (3) the lack of toxic effects; (4) its hæmostatic action; (5) its solubility in water; (6) the fact that a weak solution can be used to promote moderate fibrinous exudate for hæmostasis; and that (7) stronger solutions can be utilized in areas where sloughing is the desired result.

V. E. DUDMAN.

Defontaine, L.: A Method of Gastrostomy (Un procédé de gastrostomie). *Bull. et mém. Soc. de chir. de Par.*, 1917, xliii, 1982.

Defontaine's method of gastrostomy comprises:

1. A median supra-umbilical laparotomy for exploration of the stomach.

2. Fixation and opening of the stomach wall, bringing it to the outside by a forceps through the abdominal wall in the neighborhood of the rectus muscle.

The supra-umbilical incision permits approach to the best point in the stomach wall, nearest to the cardia and furthest from a neoplasm, if such exist, and no harmful dragging is necessary. It also sustains the abdominal wall while the forceps traverses the rectus and perforates the peritoneum; it protects the viscera against any wound which the forceps might cause when it penetrates the abdominal cavity.

A small incision is made in the abdominal wall in the vicinity of the rectus on the left side at a point corresponding to that point of the stomach which is to be seized; the anterior sheath of the rectus is slit by the bistoury. Through this orifice a Terrier or a Delagenière forceps is passed closed, and pushed through the muscle with the aid of the finger, and then into the peritoneum. The forceps is then opened and the stomach wall is seized in its entire thickness. It is slowly drawn to the exterior through the abdominal wall orifice.

Four stitches fix the gastric muscular serosa to the musculo-aponeurotic wall of the abdomen; then with the gastric cavity opened, four more stitches fix the whole thickness of the stomach wall, including the mucosa, to the skin. The abdominal incision is then closed.

As the fibers of the rectus muscle have neither been dissected nor dragged, but only separated at a limited point, they help in rendering the opening in the stomach patent. Because the abdominal wall has not been divided in the vicinity of the new orifice, it need not be closed by sutures and the chance of disunion is avoided.

The author used this method in a child of three and one-half years following the swallowing of some acid two months before. The opening remained patent.

W. A. BRENNAN.

Carter, H. S.: The Medical Aspect of Gastro-Enterostomy. *Am. J. M. Sc.*, 1917, cliv, 851.

In the discussion of gastro-enterostomy, its relation to chronic gastric or duodenal ulcer alone is under consideration.

The author believes that these cases are medical before they are surgical, because they should all be given the benefit of a thorough, painstaking medical cure, or even two medical cures, before surgery is considered. The reason for this insistence is because a fair proportion of cases do get permanently well on this plan of treatment and are spared the operative risks, as Carter attempts to show by statistics.

The indications for operation, provided that medical cure has failed or is inadvisable, are: (1) chronicity of the symptoms in spite of medical treatment; (2) repeated hæmorrhage or very severe hæmorrhage; (3) pyloric stenosis.

The result of gastro-enterostomy on the symptoms as far as the immediate effect is concerned is usually a happy one after the postoperative discomfort is over; the changes in secretions following this operation are often insignificant, and in general, the author claims, it may be said that the acid values shown by gastric analysis are all somewhat lower; but the case that was hyperacid before operation is apt to remain so following operation, although the acid values are less. The cases with normal preoperative acidity are seen to have the acidity more or less reduced, but often show little change, while other cases promptly show an achylia. Certain cases remain with a hypersecretion, while in others it occurs for the first time following operation.

Operations on the stomach with a normal secretion and motility often result in stasis or hypersecretion or both and operative treatment on a stomach with delayed motility and hypersecretion usally brings motility to normal and lowers acidity. The modification of the symptoms and secretion, Carter believes, is undoubtedly do to: (1) the relief of pylorospasm, which follows the operation; (2) the inflowing of alkaline jejunal contents; (3) lessened emptying time of the stomach provided the pylorus has not been occluded. In generally weak patients, there will be atony and delayed emptying. If vigor is promptly restored and the pylorus is patent, gastric motility is better and the emptying time shorter than normal. The character of the stools is apt to be unduly copious in comparison

with the meals eaten, and this is probably due to poor fat absorption.

The remote result of gastro-enterostomy in regard to the symptoms is the permanent relief of these, provided no complication exists and the ulcer heals. The secretions gradually become normal, showing lower acid values than before or immediately following operation. The late results in motility are the same as the early results when there is no atony.

When one looks at the surgical statistics regarding the end-results of gastro-enterostomy, it will be seen that in comparison with the medical result, the percentage of cures is higher, apparently increasingly so, as the cases are properly selected, the operation performed by a competent surgeon, and the patient judiciously cared for and fed after the operation. Up to the present time most surgeons have been extremely careless in the matter of diet. After operation the ulcer is still present and potent for evil; it is also possible to produce an ulcer on the jejunal wall opposite the new stoma by constant trauma of rough food plus a hyperacid gastric juice.

All cases of gastro-enterostomy should be given a regular ulcer diet, giving the old ulcer the most favorable opportunity to heal and preventing food irritation elsewhere. E. C. ROBITSHEK.

Mayo, C. H.: Jejunostomy; Its Indications and Methods. *J.-Lancet*, 1917, xxxvii, 793.

The author advises jejunostomy for the relief of obstruction and for purposes of nutrition. In the first group are cases of obstruction following operation and cases of acute obstruction from some unknown cause. In the second group are those cases of widespread cancer of the stomach obstructing the cardia and leaving little room for gastrostomy, cases of extensive laceration of a cancer of the stomach made accidentally during exploration, and extreme cases of nervous vomiting of girls from eighteen to twenty-five years of age.

The operation for purposes of nutrition is performed through a midline or left lateral incision; for the relief of obstruction it is best to re-open the former incision unless it is infected. In cases of obstruction the operation should be performed as soon as the evening of the third day or on the fourth day. If there is no general peritonitis and the obstructive condition is recognized early, the operator may explore the region of the primary operation, separating bands of adhesions or kinks and relieving the obstruction.

If jejunostomy is considered necessary, a No. 10 English catheter is inserted a few inches into the lining of the selected gut and is fixed to the bowel by a purse-string suture of chromic catgut or silk. The catheter is then depressed into the wall of the bowel which is sutured over it for an inch and a half. It is passed through a perforation in the omentum and brought out through the incision, sutures being passed through the peritoneum, the omentum, and the intestine on each side of the tube to hold it in position. JOHN W. TURNER.

Ruggles, H. E.: Right-Sided Position of the Stomach in Inflammatory Conditions in the Ileocæcal Region. *Am. J. Roentgenol.*, 1917, iv, 577.

The author's attention having been called to the right-sided position of the stomach in a case of extensive adhesions involving the ascending colon and omentum, he subsequently noted a similar displacement in several cases where operation failed to discover sufficient evidence to account for it. In a series of 24 cases, 12 of which were operated upon and found to have adhesions or disease in the ileocæcal region, 6 had their incisura angularis shifted well over to the right side. In the other 12 cases, 6 of them individuals in whom operation revealed no ileocæcal adhesions and the others being free from clinical and roentgenological evidence of appendiceal disease, the incisura was to the left of the median line.

In view of these findings, the author believes that where right-sided displacement of the stomach is noted, the ileocæcal region should be subjected to an unusually thorough examination for other evidence of pathology. ADOLPH HARTUNG.

Beekman, F., Smith, M. K., and Everingham, S.: Acute Appendicitis; an Analysis of 500 Cases. *Am. J. M. Sc.*, 1917, cliv, 490.

The authors base their paper on a study of the cases of acute appendicitis admitted to Bellevue Hospital during the years 1911 to 1916 on the services of different surgeons.

It was their experience that if the gross appearance of the appendix was not evidently that of acute disease, there was seldom other sufficient evidence to so regard it. They quote Moschcowitz's statement that in 90 per cent of the cases the diagnosis of a present or previous appendicitis may be easily recognized by the naked eye. They report a mortality of 6.8 per cent. The mortality is reduced to only 1 per cent if operation is done within the first twenty-four hours. By the end of the second day the mortality is quadrupled, and by the end of the third day the mortality is far above the general average.

The lesson to be drawn from this is that in the presence of virulent infections and low resistance, a delay of seventy-two hours seriously compromises the hope of recovery. Operations done later than twenty-four hours after the onset of symptoms cannot be considered early. They found that twice as many died who were operated upon the third day after the onset of symptoms as on any other day of the illness. Another factor influencing the mortality is the age of the patient; the very young and the elderly often succumb. In their series the mortality of those under ten years and over fifty is 23 per cent, as opposed to a mortality of 4.7 per cent for those between.

They believe the mortality figure may be greatly improved by making an early diagnosis followed by immediate operation. Death was ascribed to intra-

abdominal suppuration in 82 per cent of their 34 fatal cases, of which 62 per cent was due to diffuse peritonitis. A temperature over 104° is usually indicative of diffuse peritonitis. Abscesses were found in 21 per cent. Fæcal fistula and postoperative pneumonia were the most common sequelæ, the former in 5 per cent, the latter in 2.5 per cent of the cases.

In conclusion they emphasize the fact that operation should be performed as soon as the diagnosis of appendicitis is made, because the shorter the period between the onset of the disease and surgical interference, the better the prognosis, the death rate being lower, few complications and sequelæ developing, and the stay in the hospital shortened.

G. W. HOCHREIN.

Rouchier: Appendicitis in the War (Appendicite à la guerre). *Bull. et mém. Soc. de chir. de Par.*, 1917, xliii, 1846.

Rouchier finds that appendicitis is more frequent in the army than in civil life. This is probably due to fatigue and exposure to wet and cold, which renders a latent infection acute by lowering the resistance or it may even give origin to primary acute appendicitis. The crises are particularly severe but it happens that men who are inured to hardships endure these crises often without seeking aid, and such cases arrive at hospitals with fully established diffuse peritonitis and perforated appendices.

Rouchier thinks that when the diagnosis of appendicitis is made, the patient should at once be sent to a surgical center where he can be operated upon if necessary. The operation should be carried out at the surgical post within at least thirty-six hours, and if this interval is exceeded Rouchier thinks that operation should be delayed until after the acute attack.

When the diagnosis is made early, the patient can generally be transported so as to arrive at the surgical station in sufficient time to benefit by an early operation.

The important points therefore are early diagnosis and immediate transport, even in cases where there are only suspicious symptoms. W. A. BRENNAN.

Baird, R. W., and Kindley, G. C.: Hirschsprung's Disease; Report of a Case. *South. M. J.*, 1917, x, 846.

The patient was a girl six years of age with a negative family and previous medical history. The illness began with pain in the abdomen followed by diarrhœa, about two and one-half years before she was seen. These attacks occurred every two or three weeks for about one year. The appetite was fairly good, but as the disease progressed there was nausea in the morning. She slept well at night but was drowsy during the day. Diarrhœa alternated with constipation. The urine was scanty.

At physical examination, the patient, though very pale, showed no emaciation. Her face was œdematous and the skin rough and dry. There was erythema of the back of the forearms and over much of the body. The tongue was badly coated, the tonsils large and cryptic, and there was a soft systolic murmur at the base of the heart with some cardiac dilatation. The spleen was not palpable and there was no glandular enlargement. The abdomen was distended and tympanitic. A mass the size of a small orange was palpable at the umbilical area, while a larger mass extended from the right hypochondrium down to the pelvis and then upward to the left hypochondrium.

Blood count showed 1,315,000 reds; 8,600 whites; hæmoglobin 10 per cent; polymorphonuclears 68 per cent; color index 0.4 per cent; with one normoblast, slight pœcilocytosis, marked anisocytosis and some polychromatophilia. The stool contained occult blood; otherwise it was negative.

X-ray examination following a barium meal confirmed the diagnosis of megacolon. The patient died the third day after admission. No necropsy was permitted. CARL R. STEINKE.

Mayo, W. J.: A Study of the Rectosigmoid. *Surg., Gynec. & Obst.*, 1917, xxv, 616.

The rectosigmoid is the narrowest part of the large intestine. It consists of 3½ inches of the intestinal tract, and includes the terminal 2 inches of the sigmoid and the proximal 1½ inches of the rectum. It has a definite mechanism for the purpose of retarding the fæcal current and preventing continuous progress of the intestinal contents into the rectum. The rectum proper begins at the middle of the third sacral vertebra and, anatomically speaking, ends at the level of the apex of the prostate in the male and at the upper level of the perineal body in the female, sites which mark the beginning of the so-called second portion of the rectum, or, more correctly, the anal canal.

The anal canal has its origin in the proctodæum or skin infold. It is lined with pavement epithelium, has no mucous glands, and is in no way a part of the rectum, but is rather a retentive mechanism extraordinarily well adapted to temporary rectal retention. The anal canal is about 3 cm. in length, and passes upward and forward at such an angle in relation to the musculature of the rectum as to relieve the strain on the sphincter muscles.

The rectum is a single organ averaging 11 cm. in length, with a protective sigmoid mechanism above and the sphincter apparatus of the anal canal below.

This interpretation of the anatomy of the rectum is in harmony with its embryologic origin. The rectum proper is derived from the cloaca, a highly differentiated part of the hind gut from which also the bladder is derived. Definite anatomic changes are to be found in the epithelial layers of the mucous membrane at the rectosigmoid juncture and possibly a tissue weakness worthy of note.

The more or less circular folds of the mucous membrane of the sigmoid in this terminal portion

take on a longitudinal arrangement with much the appearance of the columns of Morgagni and the rectal sinuses, and end in a rudimentary sphincter apparatus at the very beginning of the rectum. This hint of a sigmoid sphincter at the rectosigmoid union forms a well-marked resisting constriction to the readily dilatable sigmoid above and the rectum below.

This circular band at the termination of the sigmoid contains considerable non-striated muscle fiber and was found in eighty per cent of 46 cases, and in 2 of the 46 it amounted to a definite narrowing which reduced the caliber to a considerable extent.

The impression is gained that ordinarily the rectosigmoid is an arrangement for retention of contents in the sigmoid proper, and that under certain circumstances the controlling mechanism may subject the parts to undue stress.

The terminal sigmoid, as held by its mesentery, has considerable play, and curves from its rectal attachment. The longitudinal muscle-bands are well developed and by spreading out grasp the entire rectum. It is probable that contraction of these bands from the fixed point of the rectum under proper stimulation enables the sigmoid to straighten and pour its contents into the rectum, while under ordinary circumstances the angulation is co-effective in retention. Investigation shows that the emptying of the large intestine from the splenic flexure is accomplished largely by syphonage. The hardened head of the fæcal current rests at the rectosigmoid and the syphon is established when this mass, which can be compared to the piston of a syringe, moves onward.

The difficulty of guiding tubes and instruments from the rectum into the sigmoid is due to the rectosigmoid mechanism, and ordinarily it is futile to use the so-called colonic tube, the passage of which out of sight into the rectum, where it remains coiled, leads to the supposition that it has passed into the sigmoid. Single or several polypi which are so frequently found in the ampulla of the rectum and which, on straining, are grasped in the sphincter apparatus and rendered pedunculated, have their counterpart in the single, or at most, two or three polypi, which are so often found in the terminal sigmoid and which for the same reasons have become pedunculated into the rectum. Hirschsprung's disease, or giant colon, as a rule has its origin in the rectosigmoid mechanism. Diverticulitis and other infections are frequent in this locality.

With the exception of the pyloric end of the stomach, carcinoma is to be found more frequently in this 3½ inches than in any corresponding part of the gastro-intestinal tract. In an investigation of the last 100 specimens of cancer of the rectum and rectosigmoid removed consecutively at St. Mary's Hospital, Rochester, Minnesota, it was found that 28 were located in the rectosigmoid juncture, extending as much on the rectal as on the sigmoid side; 21 involved the juncture but extended more on the rectal than on the sigmoid side; 14 involved the juncture but extended more on the sigmoid than on the rectal side. Thus 63 per cent involved the rectosigmoid, 30 per cent the rectum only, and 7 per cent the anal canal.

Pennington, J. R.: Anal and Rectal Fistula. *J. Am. M. Ass.*, 1917, lxix, 1501.

The author emphasizes the importance of considering the sinuses and diverticula of the lower bowel as prominent etiological factors, from an embryological standpoint, in the causation of fistulæ and abscesses. He also cites traumatic causes and pathological conditions favoring the invasion of pathogenic bacteria, which is the essential exciting factor.

The development of fistulæ resolves itself into: (1) the prefistula stage; (2) the stage of infection; (3) the abscess stage; and (4) the fistula stage.

The position of the internal fistular opening is the point of chief prognostic import. Accurate determination of the cause of the tract is often difficult, though this may be solved by use of the roentgen ray.

Careful rectal hygiene is advocated as prophylactic treatment. Conservative drainage, in the abscess stage, and injection with bismuth subnitrate ointment is advanced as an abortive measure; this treatment is effective also in some cases after having reached the fistula stage.

He recommends, in particular, that in the operative treatment of fistulæ the entire tract, including the surrounding pyogenic membrane, be dissected out thoroughly, and, having been assured of entire cessation of hæmorrhage, that the wound be entirely closed by suture, using catgut for the mucous membrane and sphincter, and silkworm-gut for skin and fascia.

V. E. DUDMAN.

Brav, H. A.: The Pathology, Diagnosis, and Treatment of Internal Hæmorrhoids. *N. Y. M. J.*, 1917, cvi, 1118.

Internal hæmorrhoids are varicosities of the middle and superior hæmorrhoidal veins, sometimes associated with eversion of the rectal mucous membrane. Allingham describes three varieties of internal hæmorrhoids: capillary, arterial, and venous, which the author considers the first, second and third stages respectively of hæmorrhoidal development, the venous type consisting of a mass of large dilated veins beneath the mucous membrane which has become thickened by repeated irritation, producing a large bluish tumor which protrudes during defecation.

The diagnosis of internal hæmorrhoids is apt to be confounded with cancer of the rectum, polypus, and prolapse of the rectum. The difficulty arises in the early stage of hæmorrhoidal development when there is no external evidence of internal piles and bleeding is the only symptom. The diagnosis is also more difficult when hæmorrhoids are complicat-

ed by a fissure or ulcer of the rectum. An examination in a case of internal hæmorrhoids should never terminate at the evidence of hæmorrhoidal tumors, for it often happens that higher up a stricture exists which manifests no other signs of its presence except the hæmorrhoids.

The treatment of internal hæmorrhoids is generally considered under two heads, namely, palliative measures, and radical cure by operation. Permanent cures cannot be effected with palliative measures in the third stage of hæmorrhoidal development. Internal hæmorrhoids secondary to stricture of the urethra, enlarged prostate, vesical calculus, pregnancy, or neoplasm will completely disappear when these affections are cured. Constipation, the most common cause of internal hæmorrhoids, should be treated by regulation of the diet, injection of olive oil, or in obstinate cases, saline cathartics are indicated.

Hæmorrhage is most efficiently relieved by the use of astringents and cold. Hæmorrhage from a spurting vessel can be stopped by a ligature.

The injection of a moderately strong solution of carbolic acid into the center of the pile results in a hardening and diminution in the size of the hæmorrhoid. The author uses a solution consisting of one part pure carbolic acid to two parts of glycerine and two parts of water, injecting 5 to 10 drops into a hæmorrhoid.

Strangulated piles, if an operation is refused, should be treated by local application of lead water and laudanum lotion applied ice cold, which often reduces the swelling so that reduction by taxis may be accomplished.

Of the operative methods for radical cure of internal hæmorrhoids the author prefers the ligature or Salnon's operation. After the ligature has been tied, he does not cut off the pile unless it is very large, but replaces it within the bowel. He also inserts into the rectum a firm piece of rubber tubing 3½ inches long and 1 inch in diameter, around which sterile absorbent cotton is wrapped. The tube serves to allow the escape of flatus, the possible detection of bleeding, and the passage of a catheter for the giving of enemas when necessary.

The clamp and cautery operation has won an enviable reputation and the author prefers it next to the ligature operation.

From the author's experience in the treatment of internal hæmorrhoids he has arrived at the following conclusions:

1. In the treatment it is important to determine whether the disease is primary or secondary to some affection of the pelvic organs.
2. In the first stage of hæmorrhoidal disease no treatment is indicated.
3. The true value of non-operative treatment is frequently underestimated in the second stage of hæmorrhoidal disease.
4. None but operative treatment should be resorted to in the third stage of hæmorrhoidal disease.

V. C. HUNT.

LIVER, PANCREAS, AND SPLEEN

Manzone, C.: Carcinoma of the Gall-Bladder (Sobre un caso de carcinoma de la vesicula biliar). *Semana méd.*, Buenos Aires, 1917, xxiv, 428.

Manzone's patient was a woman of 63 years who was diagnosed and treated for cholelithiasis. Laparotomy showed a tumor involving the neck of the gall-bladder and the first part of the cystic duct. The bladder, duct, tumor and liver formed a conglomerate mass which had lost all anatomic relations. On incising the gall-bladder a large single calculus was found and easily extracted. There were no signs of superficial ulceration.

Owing to the conditions, a radical operation could not be performed and intervention was confined to cholecystostomy. The biliary colic ceased after operation, but the general state did not improve.

Although there was no histological confirmation, yet by reason of the lesions observed during operation and of the progress of the case after operation, the author believes this was a case of primary carcinoma of the gall-bladder associated with lithiasis, and that the lithiasis preceded the neoplasm.

W. A. BRENNAN.

Duemling, H. A.: Cholecystectomy Versus Cholecystotomy. *J. Indiana St. M. Ass.*, 1917, x, 466.

The author reports 10 cases of cholecystotomies and 42 cases of cholecystectomy. In this group there were 7 deaths: one each from pulmonary embolism, cholecystitis, Charcot's fever, cholangitis, cholelithiasis and two from sepsis due to gangrene.

Gall-stones have been removed for the past three hundred years in the following ways:

1. The escharotic method by which preparations were spread on the gall-bladder region until firm adhesions were formed between the parietal peritoneum and the gall-bladder.
2. The attachment of the gall-bladder to the parietal peritoneum by sutures.
3. Cystendesis: opening the gall-bladder, suturing and returning it to the abdominal cavity. Many of these cases developed peritonitis.
4. Pappert's waterproof tube drainage.
5. Removal of the gall-bladder.
6. Choledochotomy and the use of the T-tube for drainage.

The author says that stones can be diagnosticated positively only when stones have been found in the fæces, or have been vomited. Stones do not constitute the disease of the gall-bladder, but are the result. The removal of a stone will not cure the disease unless something is done to remove the cause.

The following are the indications for cholecystectomy: (1) phlegmonous cholecystitis; (2) empyema of the gall-bladder; (3) chronic cholecystitis, with shrunken and thickened gall-bladder walls; (4) hydrops; (5) extensive injury of the gall-bladder; (6) carcinoma, if limited to the gall-bladder.

Mayo says that cholecystotomy and the removal of stones will cure symptoms of mechanical obstruction, but will not cure chronic cholecystitis and cannot restore the destroyed wall of the gall-bladder in freeing it from adhesions.

The contra-indications to cholecystectomies are: (1) inability to get a clear field for operation, especially in the very obese; (2) stenosis of the common duct; (3) pancreatic disease.

The author in doing a cholecystectomy gets a clear field, starts his dissection from the fundus of the gall-bladder, ligates the cystic artery separately and provides drainage. C. A. BOWERS.

Willis, A. M.: Cholecystectomy Without Drainage. *J. Am. M. Ass.*, 1917, lxix, 1943.

The author gives the results in 549 gall-bladder operations and describes the technique followed by him in cholecystectomy.

A right rectus incision, curving toward the xiphoid at the upper end, is used. An incision is made into the hepatoduodenal ligament, and the pelvis of the gall-bladder is grasped and pulled upward while a right angle clamp seizes the cystic duct and artery. The author believes that this method of securing the duct and artery absolutely obviates the danger of injuring the common duct in the procedure. A ligature is then put around the cystic duct close up to its junction with the common duct and a second ligature is placed around the cystic duct and artery and the two are cut, the gall-bladder being dissected out from below upward. The stump of the cystic duct is secured in the ligament by means of a crown suture passing through both layers of peritoneum and around the stump. The raw surface is covered with peritoneum and the abdomen closed without drainage.

In the author's series of 549 operations there were 398 cholecystostomies with a mortality of 1.7 per cent, 107 cholecystectomies with a mortality of 0.9 per cent, and 44 choledochotomies with a mortality of 9.0 per cent. There were 26 secondary operations, 21 following cholecystostomy and five following choledochotomy. The death occurring in the cholecystectomy group was in the case of a woman aged 66 with a simple case of cholelithiasis. The gall-bladder was ruptured during removal and the abdomen was closed without drainage. The patient suffered urinary suppression and died three days after operation. At necropsy a small abscess was found between the liver and transverse colon and an acute nephritis was revealed.

JOHN W. TURNER.

Vincent, W. G.: Malignancy of the Biliary Apparatus. *Med. Rec.*, 1917, xcii, 933.

From October, 1914, to March, 1917, about 22,000 patients have been admitted to the New York Postgraduate Hospital. During this same period there have been 15 cases in which malignant tumor of the liver was such an outstanding feature of the pathologic condition as to be made the principal diagnostic heading on the discharge card, and the same applies to 10 cases of malignancy of the gall-bladder and one case of carcinoma of the papilla of Vater.

Primary carcinoma of the liver is rare. It may occur at any age, but it is comparatively rarely seen before the age of forty. Castle finds that 42 cases of primary carcinoma of the liver in individuals up to the age of sixteen have been reported. While carcinoma of the gall-bladder occurs more frequently in women than in men, the opposite condition obtains as regards primary cancer of the liver. The secondary involvement is much more common in women than in men.

Primary carcinoma of the liver may be single or multiple and usually originates in the region of the gall-bladder, the hilus of the liver or the bile-ducts; rarely from the parenchyma cells. Many hold that cirrhosis or syphilitic cicatrization is the primary affection and carcinoma development secondary.

The description of the three forms of primary carcinomatosis of the liver as outlined by Zeigler follows:

The symptoms depend largely upon the site, size, and histologic character of the growth and degree of involvement of the surrounding structures.

Early diagnosis cannot be positively made without exploratory laparotomy. The prognosis is very bad; and as for treatment, early radical operation offers the only opportunity, and in a few instances this has been obtained.

Primary sarcoma of the liver is very rare, but many metastatic cases have been reported. The symptoms are similar to those of hepatic carcinoma. The treatment is hopeless. Carcinoma of the gall-bladder is much more common then carcinoma of the liver. The primary etiological factor is gall-stones. The growth takes the form of a papillary or fungous tumor, or a cancerous ulcer.

Primary carcinoma of the gall-bladder is extremely rare. Symptoms are very similar to those of carcinoma of the liver, but there is in addition usually a history of gall-stones. Unless the condition is recognized very early, operation offers practically no cure.

Primary carcinoma of the bile-ducts differs from carcinoma of the gall-bladder in a number of particulars. First, it is more frequent in men than in women; second, usually the first symptom that calls attention to the biliary apparatus is jaundice. Most of the cases occur in the common duct or at its junction with the cystic and hepatic ducts. The growth is of the annular type, or occurs as a papillary outgrowth into the lumen. The symptoms are jaundice, which generally begins insidiously and gradually increases in intensity, and which once established is permanent; cachexia and rapid loss of strength; pain in the epigastric or gall-bladder region, usually of dull aching character but occasionally colic-like when the gall-bladder

attempts to empty itself; and enlargement of the gall-bladder.

The principal condition from which carcinoma of the ducts must be differentiated is stone in the common duct. In this latter condition the jaundice usually occurs suddenly, is always intermittent, and the entrance of bile into the intestine is never permanently blocked.

With carcinoma, on the contrary, once the passage of bile is blocked, acholia is permanent unless connection with the gastro-intestinal tract is restored by operative means. The pain in calculous obstruction is sudden and severe and apt to radiate, while that of malignant disease is usually dull, dragging, and persistent. Cachexia and rapid loss of strength would also point to malignant rather than to calculous disease. The treatment is the prophylactic early removal of gall-stones.

Carcinoma of the papilla of Vater is a rare condition. The symptoms are those of interference with the flow of pancreatic fluid and the bile, together with symptoms of obstruction in the duodenum. The treatment is by excision if possible, together with provision for the re-establishment of the flow of bile into the gastro-intestinal tract. In most cases gastro-enterostomy is also required.

E. C. ROBITSHEK.

Grey, E. G.: The Diversion of the Pancreatic Juice from the Duodenum into the Stomach; Its Effects upon the Level of Gastric Acidity and upon the Pancreas. *J. Exp. Med.*, 1917, xxvi, 825.

Recent work has shown the important part played by the alkaline duodenal contents, the pancreatic juice in particular, in the maintenance of a uniform level of gastric acidity. The author also comments on the fact that it has been demonstrated experimentally that a regurgitation of duodenal juices, after the ingestion of certain foodstuffs, is of such regular occurrence that the process has been regarded as an accompaniment of normal gastric digestion; and furthermore, that neutral, alkaline, or feebly acid fluids provoke a secretion of acid juice in order that the gastric acidity may be brought to the normal level. There is but little evidence, however, to show how the level of gastric acidity is affected when alkaline solutions are introduced into the stomach more or less continuously throughout the period of digestion.

The present report is based upon the results obtained from experiments carried out on seven dogs. Inasmuch as the principal purpose of the investigation was to follow the changes in the acidity level of the stomach, it seemed best to the author to analyze specimens of the test meals instead of studying the pure gastric juice, which was the method employed in previous experiments. For this purpose the gastric fistula as devised by Janeway proved to be very satisfactory to the author. All the animals were anæsthetized with ether.

A small three-sided piece of stomach wall was turned down toward the greater curvature. This constituted a rectangular flap with its blood supply intact. By sewing the lateral margins together and closing the opening in the gastric wall a small tube was formed which was lined throughout by mucous membrane. The distal end was then sewed into the abdominal wall, care being taken to anchor it to the peritoneum, fascia, and skin. The mucosa and skin, of course, were sutured together.

In experimenting with the reconstruction, a very important feature was noted. During the first weeks subsequent to the operation there was a marked retraction of the new tube toward the peritoneal cavity, with a definite contraction of the external opening. The effects of these changes, however, Grey found could be greatly minimized if care was exercised during the operative procedure to anchor the tube in the abdominal parietes so that it protruded for several centimeters above the level of the skin, which could be done without embarrassing the blood supply.

Inspection of one of the fistulæ three or four months subsequent to its construction showed a lead-pencil-like tube, 4 or 5 cm. in length, extending through the peritoneal cavity from the abdominal wall to the stomach, which the author found to interfere but little with the normal gastric movements.

A standard mixture of 70 gm. of ground raw lean beef and 75 ccm. of tap water was used as a test meal, several dozen meals being given in each case. The dogs received the same diet each day. Water was withdrawn after the test meals had been given, but throughout the balance of the day the animals were permitted to take as much water as they desired. Samples were withdrawn for analysis two and three hours after the ingestion of the meal.

The experiments reported in this paper, Grey states, were carried out for the purpose of ascertaining how the stomach would react, in as far as the secretion of hydrochloric acid is concerned, to a more or less continuous influx of relatively strong alkaline fluid, prolonged throughout the cycle of digestion. Numerous studies have shown that any serious interference with the process of regurgitation leads to a rise in the acidity level of the stomach, i.e., to a state of hyperacidity, but there is little evidence to indicate whether the acidity level will be depressed temporarily or permanently when alkaline material in considerable amounts continues to enter the stomach.

The influx of alkaline fluid was provided for by transplanting the larger pancreatic duct into the wall of the stomach after ligating and dividing the lesser duct. Specimens of test meals for analysis were withdrawn through gastric fistulæ made after the method of Janeway.

Animals prepared in this manner served also to furnish additional information regarding the possible relation of the hydrochloric acid of the gastric juice

to certain acute inflammatory and chronic sclerotic changes in the pancreas.

From the results of his experiments it appeared to the author that the presence of a considerable amount of pancreatic juice in the stomach throughout the period of digestion led only to a moderate decrease in the acidity level of the ingesta in the later stages of digestion. Earlier in the process there was no constant alteration of the acidity level in either direction. The findings served not only to corroborate the views of Boldyreff, but also to demonstrate the remarkable compensatory activity of the gastric glands under conditions which entailed an unusual quantity of alkali in the stomach.

In addition, the author's work has shown that when the larger pancreatic duct was properly transplanted into the wall of the stomach, it might remain patent for months. In animals in which this operative procedure was carried out, the pancreas was found to undergo no inflammatory or other degenerative changes. This finding he regards as evidence against the postulate of Hlava that gastric juice is probably responsible for the occurrence of certain cases of acute hæmorrhagic pancreatitis.

GEORGE E. BEILBY.

Maurizi, M.: Acute Pancreatitis (Le pancreatiti acute) *Gazz. d. osp. e d. clin.*, Milano, 1917, xxxviii, 1091.

Maurizi thinks that acute pancreatitis is more frequent than is believed. Its differential diagnosis from acute peritonitis, intestinal occlusion, acute appendicitis and cholecystitis is very difficult. In such cases urgent intervention is indicated, and the operator, in addition to finding the pancreas swollen and marbled, will find round spots the size of a two-centesimi piece disseminated in the omentum, in the mesentery and in the parietal peritoneum. These spots are characteristic of acute pancreatitis and are due to a true intracellular digestion of fat.

W. A. BRENNAN.

Goto, K.: The Relation of the Spleen to Blood Destruction and Regeneration and to Hæmolytic Jaundice; the Influence of Splenectomy and of Blood Disintegration upon the Production of Bile Pigment. *J. Exp. Med.*, 1917, xxvi, 795.

The elimination of bile pigment and the changes following the administration of a hæmolytic agent were studied both before and after splenectomy in dogs with a bile-duct-ureter anastomosis; at the same time studies were made of the red cell and hæmoglobin content of the blood.

Four dogs of approximately the same size were used. They were fed on a standard diet containing 0.4 gm. of nitrogen per kilo and 70 calories per kilo of body weight. The diet consisted of beef heart, lard, bread crumbs, sugar, a little salt, and some bone ash. The daily intake of water was always the same.

The importance of keeping the test animals on a constant diet for bile pigment determination is obvious from the observations of Hooper and Whipple, who have shown that carbohydrates tend to increase considerably the secretion of bile pigment in dogs with bile fistula and also that on a strict meat diet the bile pigment curve is at its lowest level.

Instead of the usual external bile fistula, the bile-duct-ureter fistula of Pearce and Eisenbrey was employed. The method consisted in diverting the bile from the intestine to the urinary bladder by anastomosing the common bile-duct and the right ureter, after removal of the corresponding kidney. It had several advantages for long-continued observations and avoided some of the troubles of the external fistula, such as obstruction, infection, and losses due to accidents in collecting. The mixture of urine and bile, in the absence of jaundice, offered no difficulties for the quantitative determination of bile pigments.

Several days after this operation a preliminary blood examination was made, and if anæmia was absent and there was no evidence of obstruction of flow of bile to the bladder, the urine was collected from the cage every morning for one week and the several lots were combined for quantitative estimation of bile pigment. The animals were not catheterized, the urine being collected daily and preserved in cold storage until the quantitative determination of bile pigment was made.

The general outcome of these experiments is shown by the author in a series of four tables, and from these he summarizes the obtained results as follows:

In four animals with a bile-duct-ureter anastomosis and without disturbance due to obstruction or absorption, the total quantity of bile pigment output during a day under normal conditions varied from 0.0618 to 0.0678 gm. These figures were practically identical with those of Stadelman but lower than those given by Hooper and Whipple, who found that the average bile pigment excretion amounted to about 1 mg. per pound of body weight per 6 hours.

In all the experiments there was definite evidence of a decrease in bile pigment elimination after splenectomy. This was true not only of the elimination when no hæmolytic agent was administered but also when excessive blood destruction was caused. Under the latter circumstances the amount of bile pigment was greatly increased but never reached the high level of blood destruction before splenectomy.

These observations appeared to the author to show conclusively that the absence of the spleen influenced the formation of bile pigment. To what extent the influence was mechanical, i.e., the change in the course of the blood to the liver, and to what extent due to anæmia, the author is unable to say from the present experiment.

GEORGE E. BEILBY.

MISCELLANEOUS

Beach, W. M.: The Relation of Hæmorrhoidal Disease to the Health Balance. *Tr. Am. Proctol. Soc.*, New York, 1917, June.

The author discusses the relationship of hæmorrhoidal disease to the health balance as marked by the following factors:

1. The deleterious effect upon the patient's mind by increasing his irritability and making him anxious and morose.

2. The many reflexes coincident with ulcerated large or small types of hæmorrhoids.

3. The influence upon the so-called vegetative functions of the body and intimate association with diseases of the heart, lungs, liver, and kidneys.

4. The refractory or retro-active relationship in most cases of constipation.

5. The tendency of neglected cases toward infections and cancer.

SURGERY OF THE EXTREMITIES

DISEASES OF THE BONES, JOINTS, MUSCLES, TENDONS, CONDITIONS COMMONLY FOUND IN THE EXTREMITIES

Bayer, V.: Filling of Infected Bone Cavities. *Muenchen. med. Wchnschr.*, 1917, No. 19.

When there is a mechanical obstacle to the outflow of pus from an infected bone cavity, recovery is much delayed and may not occur. The most unfavorable site for such cavities is the upper part of the tibia.

The author in such cases makes an inside perforation of the tibia and effects a discharge of pus through the calf musculature. The procedure is analogous to the drainage of the knee-joint toward the back. Compared with other methods, the operations show that rear drainage is rapid and much more effective. Shutting off the tibial cavity may be dangerous. Filling of the cavity by the organism itself rather than by the usual substances was considered best, and this is promoted by favoring the proliferation of granular tissue as much as possible. Such granulation develops best in moist surroundings. The author therefore keeps the cavity irrigated by fluid which constantly drips. The pus is washed out from all crevices by a strong jet every twelve hours.

The author, after testing the value of several solutions for the proliferation of granular bone tissue, finds that distilled water when not too cold is best. There was more suppuration when other fluids were used. The progress of granulation may be observed almost from day to day. Bone cavities are generally cured in a few weeks, leaving a smooth surface without either anfractuosity or fissure.

W. A. Brennan.

Cavina, G.: Penetrating Gunshot Wounds of the Knee (Le ferite d'arma da fuoco penetrate nel ginocchio). *Policlin.*, Roma, 1917, xxiv, *sez. prat.*, 1441.

The author treated 104 knee wounds, in all of which the joint was involved. There were only 8 deaths. The others recovered, with 3 thigh amputations and 4 resections.

In treatment the author thinks complete immobilization of the limb from the foot to the pelvis inclusive is of primary importance. When there is infection, the treatment of choice is arthrotomy, and in very grave cases, resection.

W. A. Brennan.

Pauchet, V.: The Treatment of Hip Wounds (Plaies de la hanche; traitement). *Presse méd.*, Par., 1917, p. 701.

Pauchet summarizes the actual treatment of hip lesions in the war. The operative indications are as follows:

1. In recent intra-articular fractures six to twelve hours old, arthrotomy, surgical clearance, removal of débris, regularization of the cervical stump, ether lavage, and filiform drainage.

2. In intra-articular infected fractures, the same treatment, followed by the Carrel method.

3. In recent extra-articular fractures, the same treatment as a complicated fracture, with the removal of foreign bodies and any loose fragments.

4. In recent infected extra-articular fractures, the same treatment as in the preceding case, with the Carrel method.

5. In infected extra-articular fractures, if the patient shows little resistance, subperiosteal resection.

6. In extra-articular infected fractures fifteen to twenty days old, subperiosteal resection with Ollier's rugine.

The techniques followed are:

1. For intra-articular fractures, Bernhard's technique. This involves incision following the axis of the femoral head and neck; exposure of the joint; incision of the capsula; resection; trimming the edges of the wounded soft parts; drainage.

2. For extra-articular fractures, Alquier and Tanton's technique, which provides external vertical incision commencing on the external face of the trochanter; exposure of the great trochanter; uncovering the capsula and splitting it; surgical clearance with the rugine, curette and osteotome.

The postoperative care is as important as the operation itself. Immediate orthopedic treatment consists of (a) immobilization; (b) position. Immobilization is effected by a plaster cast, four articula-

tions being included, namely, the two hips, one knee and one foot. The limb is placed in abduction and slight external rotation. In cases of intra-articular resection, the thigh should be in slight flexion on the pelvis. In extra-articular resections the complete thigh will be put in extension.

For intracapsular fractures, immobilization will last two to three months; and in the case of extracapsular, three to six months.

Later orthopedic treatment provides for the replacing of the plaster apparatus by a celluloid walking apparatus with a Reclus stirrup and the use of crutches for a time.

The article is well illustrated. W. A. BRENNAN.

Terada, M.: Myositis Purulenta Acuta Caused by Bacillus Typhosus; Report of a Case. *J. Am. M. Ass.*, 1917, lxix, 2101.

A case in which the typhoid bacillus produced pus is reported. The lesion occurred in the right upper arm from the elbow to the deltoid insertion, beginning as a painful reddish swelling about two weeks after the onset of chills and fever. Incision brought forth a seropurulent discharge from the wound, from which an organism was cultivated and found to be identical with one cultured from the blood of the patient. This organism showed the cultural characteristics and responded to the immunological test of bacillus typhosus.

The patient had a negative Widal reaction nine and fourteen days after the onset of the fever, but autopsy findings and the clinical course of the disease, including rose spots, a temperature of 40.2°, and typical ulcerations of Peyer's patches in the intestines, justified the diagnosis of typhoid fever. W. A. CLARK.

Clark, H. C.: Etiologic Factors in Gross Lesions of the Large Joints; Observations from 1,100 Consecutive Necropsies. *J. Am. M. Ass.*, 1917, lxix, 2099.

As a result of 1,100 autopsies on subjects from the laboring people in the Canal Zone, 172 cases of arthritis were found. Less than one per cent of those showing the lesions had been considered as arthritic suspects. The routine examination of the large joints at autopsy was undertaken when it was noticed that a number of the laborers who showed a positive Wassermann test had associated with their clinical history some ill-defined joint symptoms. Those cases showing a degenerative type of arthritis associated with a positive Wassermann or with lesions frankly syphilitic were classed as syphilitic and of these there were 96 out of the 172. The next largest group comprised 33 cases showing arteriosclerotic changes. Of the remainder, 10 were classed as gonococcus, 11 staphylo- and streptococcus, 10 undetermined, 4 tuberculosis, 2 pneumococcus, 2 meningococcus, 2 traumatic, 1 pellagra and 1 scurvy.

The lesions found in the two large groups were all about the same type. The knee was the most common of the joints involved. The joint cavity was usually dry or partially filled with a gelatinous straw-colored material, and the synovial membrane sometimes thickened, red, and granular. The cartilages were always worn and sometimes almost destroyed at the points of pressure, such as the femoral condyles and head of the tibia. In extreme cases large areas of bone were exposed at the points of pressure. W. A. CLARK.

Mally and Corpechot: Traumatic Monomyoplegias (Monomyoplegies traumatiques). *Rev. de chir.*, Par., 1917, lii, 281.

The authors' study is based on a group of lesions of the peripheric nervous system caused by modern projectiles of war. The following conclusions are reached:

1. The term monomyoplegia is applied to the paralysis of a muscle due to injury of its motor nerve system after emergence of the corresponding nerve.

2. Modern projectiles, owing to their special penetrative qualities, very often cause paralytic complications of a monomuscular type such as were rarely observed before the present war.

3. Such paralyses show the same clinical signs as paralyses due to lesion of the great peripheric nerve-trunks, the same alterations of electrical excitability of the paralyzed muscles, with the same course and an identical prognosis.

4. Their particular type is characterized by the localization of the paralysis to one or several related muscles; and the functional importance is confined generally to the effect on the muscle group.

5. The etiologic factor is a lesion of the nerve filaments innervating the muscle or of the terminal or collateral ramifications of mixed nerves, or of their intramuscular zone.

6. Such myoplegias, in case of incurability, call for surgical intervention. Owing to the technical surgical difficulties of dealing directly with such minute nerve lesions, surgical treatment may have to be confined to prosthetics. W. A. BRENNAN.

Habhegger, C. J.: Acute Osteomyelitis of the Clavicle. *Am. J. Surg.*, 1917, xxxi, 309.

Froehners' statistics show that acute osteomyelitis of the short and flat bones is of much less frequent occurrence than osteomyelitis of the long bones. This is probably due to the structure of the bones and the fact that their growth is less rapid than that of the long bones. The clavicle is the most frequent of the bones classified as short or flat to become the seat of osteomyelitis infection. While structurally a short or flat bone, its growth at certain periods is quite rapid and it is subjected to great pressure and strain, as are long bones. It therefore really occupies a position between the short and flat bones, and the long bones. Infections of the clavicle have at times the characteristics of similar infections of short or flat bones, which are usually quite mild, and again

those of infections of the long bones, which as a rule are quite destructive. In acute osteomyelitis of the clavicle all grades of inflammatory processes take place from the mildest type with little or no destruction of bone to the most virulent and destructive type with necrosis of the entire bone and grave general symptoms.

The author's collection of 17 reported cases shows a mortality of 9.24 per cent. Of these, 12 were males and 5 were females. The majority of the cases occurred between eight and sixteen years, although quite a number of cases reported occurred in the very young and in adult life. As etiological factors, traumatism played a part in about a quarter of the cases reported. Infection of the upper extremities was present in about 10 per cent of the cases.

The symptoms are those of a severe inflammation of the clavicular region, accompanied by fever and prostration, and terminating in necrosis of the whole bone with the formation of an abscess and fistulous opening; in the less acute cases, limited necrosis with abscess formation and fistulous openings or enlargement of the bone with osteoporotic changes terminating also in caries of a greater or lesser degree.

The bacteriology corresponds in the main to that of osteomyelitis of the long bones. The operative procedure most employed has been total resection of the clavicle with preservation of the periosteum, although in some cases partial resection or sequestrotomy has been followed by good results. Klem believes that a total resection should always be resorted to in cases of osteomyelitis of the clavicle, because it is frequently impossible to distinguish healthy from diseased bone, and recurrence of the disease cannot follow a total extirpation.

Winslow, R.: Fungous Diseases of the Foot or Madura Foot in America. *Ann. Surg.*, Phila., 1917, lxvi, 496.

Madura foot occurs in three forms, the white or yellowish, the black, and the pink or red varieties. These varieties are so classified from the appearance of certain grains or particles that escape with the discharge from the sinuses that are found in the affected part. The most common form is the white or ochroid; next in frequency is the black or melanoid, and least frequent is the red or pink variety.

The ochroid or white form of the disease when examined under the microscope shows fungi that resemble very closely the actinomyces, and it is probable that some, at least, of the reported cases are due to the ray fungus. In some of these cases, however, the granules resemble fish roe in appearance and are probably not due to the ray fungus.

The granules from the melanoid or black differ very materially in appearance and characteristics from those of the ochroid form, being black in color like grains of gunpowder, and hard and resistant to pressure, while those from the ochroid variety are light in color, soft and easily crushed. From the observations of Wright and others it is evident that the ochroid and melanoid forms of the disease are not due to the same fungus or organism, the ochroid variety being due to a streptothrix, while the melanoid form is due to a more highly organized fungus or hyphomycete.

Clinically mycetoma is a chronic inflammatory condition, usually, but not invariably, affecting the tissues of the foot, in which the foot becomes much enlarged, with nodular masses that break down and form sinuses, from which a thin purulent fluid escapes. In this discharge are seen pale or black bodies which when examined microscopically reveal the nature of the affection.

There is often a history of some injury of the foot, such as the penetration of a thorn or splinter. The disease therefore usually begins on the sole of the foot as a small swelling, painless at first, but, as the condition progresses becoming painful and interfering with locomotion. As the infection extends, other nodules form and suppurate, causing fistulous tracts which open externally. Eventually the whole foot becomes much swollen, with a brawny, nodular induration, and with numerous fistulæ discharging a thin serous pus containing the characteristic granules. The motions of the foot seem to be limited more by the inflammatory swelling of the soft parts than by destructive lesions of the bones, though a rarefying osteitis of the bones of the foot is also present. The disease never heals spontaneously but progresses slowly, without causing marked cachexia. Eventually, however, it terminates fatally unless arrested by appropriate treatment.

The conditions for which mycetoma is most likely to be mistaken are tuberculosis and sarcoma. As medical treatment is of no avail, amputation above the seat of the disease is the only remedy.

Up to the present time only seven cases of mycetoma have been reported in the United States and Canada. The case here reported is of a man who sustained a wound on the inner side of the instep. At the time of the injury he was wearing a pair of shoes that were covered with manure from the horse stable. The wound soon healed, but two months later an abscess formed at some distance from the original wound, which opened and gave exit to foul pus. This abscess healed and there was no further trouble until the next summer when another abscess, as large as a silver dollar, formed, which upon opening let out considerable pus. This never healed. Later the foot began to swell and the joints became very stiff and painful. He had two sick horses and a cow under his care, all of which died; one horse had a lump under the jaw. On an adjoining farm three horses died which he visited and to which he administered medicine.

The man's symptoms increased in severity. The foot became greatly enlarged, and locomotion gradually became impossible. On admission to the hospital, there was an extensive brawny swelling of the left foot extending from the tarsometatarsal

junction to above the ankle and involving the whole circumference of the foot. The skin was much indurated, and a very thin pus containing yellow particles exuded from, or could be pressed from, numerous sinuses upon the surface of the foot. The glands in the groin were somewhat enlarged. A leucocyte count of 11,800 was found. An examination of the granules from the sinuses revealed actinomyces in abundance. An amputation in the middle of the leg was performed and he made a speedy recovery. M. A. BERNSTEIN.

FRACTURES AND DISLOCATIONS

Delorme, E.: Gunshot Fractures and Especially Their Displacements (Des fractures par coups de feu et en particulier de leurs déplacements). *Arch. de méd. et pharm. mil.*, Par., 1917, lxvii, 1.

Delorme gives an extensive study of the mechanical factors concerned in gunshot fractures in the present war. This study in the first place has shown: (1) that the German bullet does not differ in its effects from its predecessors; (2) that shrapnel bullets produce very clear types of diaphyseal and epiphyseal fractures; (3) that shell fragments and other explosives act like bullets and cause the same type of lesions. These lesions are: (1) fractures without displacement; (2) simple fractures with displacement; (3) compound fractures more or less comminuted with displacement. In the present war, as in previous wars, these are the main types of diaphyseal fractures and in them the laws which have been established experimentally have been verified, viz: (1) that a diaphyseal fracture is the less extensive in length, the greater the velocity of the bullet; (2) but the greater the velocity of the bullet, the more comminuted is the fracture.

Diaphyseal fractures from gunshot are less frequently followed by large displacements than the fractures of civil life. In the latter the agent which causes a comminuted fracture usually involves a larger surface of bone than does a projectile, and better realizes the conditions necessary to produce displacement. The effect is continued after the breaking of the bone. The effect of a bullet is more destructive, but is fleeting.

The very nature of a gunshot fracture tends to limit the amount of displacement of the osseous fragments. A projectile is less powerful in producing displacements than ordinary causes, since its force is more direct and propulsive and acts rather on the splinters created by it. Besides, muscular action, which is the second cause of fragmentary displacement, is less effective in gunshot fractures than in others. However, if displacement is complete, gunshot fractures follow the same laws as others, and the lesion is aggravated if the patient has to be transported to a distant hospital with all the risks to which he may be exposed during transit; hence the advantage of operating upon fractures as near the front as possible.

Delorme gives a detailed study of diaphyseal and epiphyseal fractures of the hand, wrist, arm bones, elbow, humerus, and shoulder, together with several illustrations. In a later article the fractures of the lower limb will be dealt with. W. A. BRENNAN.

Tanton, J.: Traumatic Dislocation of the Pubic Symphysis with Important Diastases, Without Urethrovesical Lesions (Dislocation traumatique de la symphyse pubienne avec diastasis important, sans lésions urétro-vésicales). *Bull. et mém. Soc. de chir. de Par.*, 1917, xliii, 1636.

Tanton in 1916 reported a case of traumatic symphyseal diastasis without urethrovesical lesions. He now reports a second case due to an automobile accident. The patient also showed a fracture of the humerus with subcoracoid dislocation.

The pubic diastasis, which was originally two fingers wide, was reduced almost completely, being helped by the application of a compressing pelvic girdle. W. A. BRENNAN.

Taylor, G.: The Treatment of Fractures of the Long Bones. *J. Roy. Army M. Corps*, Lond., 1917, xxix, 493.

The author's experience in treating war fractures in the Cambridge Hospital, Aldershot, leads him to conclude that in gunshot fractures every effort should be made to gain the best possible alignment at the very outset by non-operative measures, and to maintain that alignment by means of such splints as absolutely immobilize the fragments, thereby promoting union, controlling and limiting bacterial activity and relieving pain. In the case of gunshot fractures, even late plating should be reserved for very exceptional cases. The author quotes a number of cases, with illustrations, to support his views. W. A. BRENNAN.

Cahill, G. F.: Fractures of the Os Calcis. *Ann. Surg.*, Phila., 1917, lxvi, 711.

Fractures of the os calcis form from two to four per cent of all fractures. Usually the condition was overlooked or a mistake was made in the diagnosis until the injured foot and ankle were submitted to the X-ray.

The calcaneum forms with the cuboid an arch, which is part of the bony structure forming the arch of the foot. The os calcis is the base of the posterior pillar and its structure is such that it gives the greatest carrying strength for its weight. A fall, the usual cause of injury to the os calcis, causes a breaking down of this arch, generally in the direction of the posterior pillar. This is due to the fact that the posterior pillar is more directly under the line of the body, is more rigid and less elastic, is shorter and its arch has a shorter arc. The denser astragalus is usually driven into the calcaneum and the fracture is usually impacted and comminuted.

Fractures of the os calcis are fractures of adult life. The average age in this series of 72 cases was 41 years, the youngest 14, and the oldest 73 years.

The rarity of the fracture in children is probably due to the elasticity of children's feet and the fact that they are found in such a large proportion in cartilage. There were 68 males to 4 females.

Fracture of the os calcis was due to a fall in 63 cases, to crushing injury in 4 cases, twisting in 2 cases, muscular action in one case, and strain by being caught in a pulley by the heel in one case.

The right os calcis was fractured 33 times, the left 31 times, and both simultaneously 8 times.

In attempting to classify the 72 cases studied, it was found impossible to group them according to Cabot and Binnie's or Lounsbury's classification of fractures of the os calcis. They were therefore classified as follows:

1. Simple fissure or linear fractures without any displacement, 14 cases.
2. Linear fractures with displacement, 10 cases.
3. Comminuted fractures with little displacement, 17 cases.
4. Comminuted fractures with marked displacement, 39 cases.

The signs and symptoms of fracture of the os calcis are pain in the ankle and heel with inability to bear the weight of the body on the foot. Swe ling is usually most pronounced under both malleoli and under the heel. Ecchymosis is usually a little late in appearing. Crepitus was made out in only 10 cases. Motion is impaired at the ankle, most marked in lateral motion. The X-ray is necessary to diagnose the type of fracture.

The treatment of these 72 cases fell into three groups: (1) operative, 2 cases; (2) immobilization without any attempt at reduction, 56 cases; (3) immobilization with attempts at reduction, 14 cases.

Two cases were operated upon; one case with a linear fracture of the posterior part of the calcaneum with marked upward displacement of the posterior fragment was treated by nailing the fragment back through a posterior incision. The result was poor, the tendo achillis sloughing, with subsequent disability. The other case was one with a loose fragment of the posterior part of the os calcis, and very marked upward displacement of the posterior fragment which was sutured back with kangaroo tendon. The subsequent result was good.

The majority of the cases were treated by simple immobilization with a plastic cast or a molded plaster splint with the foot placed at right angles to the leg and the patient made ambulatory with crutches.

Those cases treated by immobilization with attempts at reduction were treated by manipulation to loosen the displaced fragments, traction made on the heel, and the leg and foot put up in a circular plaster with the foot in extension to relax the pull of the calf muscles.

The results of treatment of fracture of the os calcis are generally poor. Simple linear or fissure fractures give the best results. The cast should be left on four weeks and should be followed by passive motion and massage, and the weight should not be borne on the foot for six to seven weeks after the injury.

Where there is a linear fracture, usually of the posterior part with upward and backward displacement of the posterior fragment, unless treated with a view to reducing the displacement, there will be more or less permanent disability. Cabot and Binnie, in order to pull the fragment down, passed an urethral sound above the os calcis inside the tendo achillis, and making traction downward reduced the displacement. Cotton recommends the same procedure, but uses a pair of ice tongs. Lounsbury after reduction cuts the tendo achillis to prevent the pull of the calf muscles.

Open operation with nailing of the fragments has given poor results. In fractures of the extreme posterior part, operation with suturing of the fragment back in place with a kangaroo tendon suture is the only treatment. Comminuted fractures without displacement do not give good results. The results are usually bad in comminuted fractures with well-marked displacement. For this type of case Cotton has laid down the following rules:

1. Loosen up the fracture by manipulation.
2. Pull the heel down.
3. Free the joint motion between the astragalus and calcis.
4. Push in the displaced bone under the external malleolus.
5. Put the foot up in plaster, not at right angles, but with the heel cord slack; also avoid direct pressure over the heel.

The after-care of fractures of the os calcis consists of passive motion and massage. Pain in the sole of the foot is a frequent late symptom and may be relieved by an arch support. Pains in the heel or under the external malleolus are usually due to spurs and had best be removed. V. C. HUNT.

SURGERY OF THE BONES, JOINTS, ETC.

Tanton, J.: Late Secondary Resection of the Right Shoulder; Reproduction of Ten Centimeters of Bone (Résection secondaire tardive de l'épaule droite; regeneration d'une colonne osseuse de dix centimétres). *Bull. et mém. Soc. de chir. de Par.*, 1917, xliii, 1653.

The patient in Tanton's case had a very low resection of the right shoulder, below the pectoral insertion on the humerus, the piece removed measuring 14 cm. This was done fourteen days after injury by a shell. After reproduction of about 10 cm. of the bone, the patient shows a shortening of only 3 cm. The shoulder is solid and the function is good. Besides this injury, the man had a comminuted fracture of the thigh, and the anterior half of the internal tuberosity of the right tibia was resected.

The author thinks that such an extensive shoulder resection as was made in this case would, if done

primarily, be followed by a swinging shoulder. The secondary resection has given a solid articulation. The arm was kept in abduction of fifty degrees.

He thinks also that in cases of such extensive resection, mobilization should be retarded, as a general rule. The period of immobilization should be prolonged beyond the ordinary period in order to give the bone time to regenerate and to avoid re-awakening of infection. W. A. BRENNAN.

Mayer, L.: Tendon Operations for Gunshot Injuries of the Hand. *J. Am. M. Ass.*, 1917, lxix, 2107.

Mayer has recently published a series of articles outlining the principles of a new system of tendon transplantation based on the anatomy and physiology of tendons. The essential principle of this system lies in the co-ordination of each step of the operation with the exact anatomic and physiologic facts. At present a double significance attaches to a rational system of tendon operations. First, there is a large group of poliomyelitis cases in which decided improvement of function can be obtained by tendon transplants; secondly, there will be unquestionably, provided the war is not brought to an abrupt conclusion, a large number of patients with gunshot injuries on whom similar operations can be satisfactorily performed.

The technique of his operation on severed flexor tendons consists in transplanting the sublimis tendon of the adjacent finger and suturing it to the distal end of the injured flexor profundus tendon; that is, two adjacent fingers are thus supplied with the profundus tendons alone, since the one sublimis tendon is converted by the operation into a deep flexor.

The steps of the operation, which he does under local anæsthesia, are as follows·

Assuming that both flexor tendons of the middle finger have been severed, and that a mass of scar tissue about the size of a fifty-cent piece occupies the midpalmar region and is densely adherent to the bone, the first incision runs from a point two inches distal to the annular ligament in a line with the tendons of the index finger to the proximal phalanx of this finger. The incision is deepened through the palmar fascia until the sublimis tendon is visible throughout its course.

The second incision is made distal to the scar tissue over the severed flexor tendons of the middle finger; it is about one and one-half inches long, slightly bowed, with the convexity toward the little finger, and extends to the base of the middle finger. The flexor tendons of the middle finger are then dissected free from the adhesions which usually bind them down. A subcutaneous channel is then bored with a dressing forceps from the proximal end of the first incision to the second incision. This step of the operation is usually rather difficult, owing to the presence of scar tissue. Then the sublimis tendon of the index finger is divided at the metacarpophalangeal joint, dissected away from the deep tendon and drawn through the subcutaneous channel. It is then sutured to the flexor profundus tendon of the third finger.

The after-treatment consists in protecting the fingers and hand with a splint for at least four weeks after the operation. The author immobilizes the tendons for two weeks before starting motion. The best exercises are the voluntary contractions of the patient's muscles. Where difficult to secure the patient's co-operation, he employed a galvanic current to secure the necessary muscular contraction. When twenty degrees of motion have been secured, the tendon is strengthened by simple resistance exercises. G. W. HOCHREIN.

Harmer, T. W.: Tendon Suture. *Boston M. & S. J.*, 1917, clxxvii, 808.

In the opinion of Harmer, unretarded strong healing of severed tendons after suture depends upon careful approximation of the severed ends by a stitch which will not destroy many tendon fibers either by transfixing or constricting, and so placed that it will not pull out with early use of the tendon.

Since 1909 he has employed a method of treating severed tendons which is not very widely known. The stitch is of silk and consists in overcasting the lateral margins of both ends of the divided tendon. The overcasting starts about the width of the tendon or a little farther back from the point of division, and comprises several whippings about the side of the tendon down to the line of division, each loop including somewhat less than one-quarter of the circumference of the tendon. When a tendon is ready to be brought together, each end then carries two stitches and each stitch two ends.

The two parts of the tendon are then brought together and the two suture-ends nearest the line of division on one side are tied. The two longer ends on the same side are then tied. Then the two pairs of stitch-ends on the other side are tied. Sometimes after tying the stitch, the severed ends, although in contact, may slightly buckle. This is caused by tying the long suture-ends too tightly and can be corrected by placing a simple stitch between the tendon ends. A dry wound before closing is desirable.

Seeping or actual hæmatomata will probably limit the amount of motion at first, may favor the production of adhesions, or may encourage infection. Care is taken in closing the wound to approximate the fascia and skin separately. No splint is used. Active motion is started as soon as the patient has recovered from the anæsthetic. The author believes it is important to start motion early.

G. W. HOCHREIN.

Skillern, P. G., Jr.: A New Method of Tubulizing a Tendon When Used as a Free Transplant. *Med. & Surg.*, 1917, i, 1108.

Skillern reports a new procedure in tendon work to meet the requirements in the following case:

The patient had cut the flexor tendons in the

right little finger seven months previous to admission to the hospital. Primary suture was attempted but failed. He was unable to flex the little finger, except at the metacarpophalangeal joint, the little finger itself remaining straight during the motion. The patient requested amputation, as the finger was more of an obstacle than an aid.

There was an absence of flexion-power of the terminal and middle phalanges, but no ankylosis of their respective joints. There was a midline scar down the front of the finger, which, however, did not cause flexion contracture.

Under local anæsthesia an incision was made along the ulnar border of the little finger from its distal flexion crease to the transverse palmar crease; through these creases incisions were made at right angles to the ulnar border incision and connecting its ends. Then the flap of skin and fat was swung outward on its radial hinge. No flexor tendons were found in the finger itself, but the stump of one of these tendons was found terminating beneath a vincular band over the base of the proximal phalanx. This band was divided and the tendon was freed. When the patient moved the little finger, the tendon was seen being drawn upward by its muscle belly.

A second incision was made over the tendon of the palmaris longus five inches in length. The deep fascia was incised on each side of the tendon and one-fourth of an inch away from it and parallel with it. Without disturbing the fascia in its anterior connection with the surface of the tendon, the latter was raised from the underlying muscle mass, and the cut edges of the deep fascia were sutured together around the deep surface of the tendon. The tendon was then cut above and below, so that its length was 10 cm. The tendon in its sheath was then transplanted to the little finger, one end sutured to the live tendon stump of the flexor profundus minimi digiti, and the other end was threaded beneath two broad ligamenta vincula, which were improvised by tunneling under connective-tissue bridges overlying the phalanges; these bridges were altered remains of the original vincular ligaments. Thus the tendon was brought down to the end of the finger, where it was anchored to the capsulotendinous pad over the base of the ungual phalanx. The incisions in the little finger were closed with interrupted sutures of silkworm-gut, with drainage. The forearm wound was closed with black silk.

Two weeks after operation the patient was able powerfully to flex the little finger at the metacarpophalangeal joint and less powerfully at the proximal interphalangeal joint, and but slightly at the distal interphalangeal joint; the range of motion was constantly increasing, however.

This method has the advantage of transplanting the tendon with its own sheath practically *in situ;* that is, its anterior connection with the deep fascia covering it is preserved intact. The nutritional state of the tendon is better preserved, and neither the surface of the tendon nor that of its sheath is exposed at any time, thus lessening the possibility of a traumatic inflammatory reaction.

The author calls attention to the fact that he never makes a midline incision down the finger, fearing the almost inevitable cicatrix flexion contracture. He prefers a lateral incision, and to permit reflection of the skin-flap, he adds, at the extremities of the longitudinal incision, transverse incisions through the normal flexion creases; incisions in these creases heal kindly and without any visible scar.

He calls attention to the fact that novocaine blocking of the ulnar nerve in its groove behind the elbow is ideal for operations upon the little finger, but the Esmarch constrictor when long retained causes great discomfort. G. W. HOCHREIN.

Tuffier, T.: The Functional State of the Stumps in War Patients Amputated in 1914-1915 (L'état fonctionnel des moignons des amputées de guerre en 1914-1915). *Arch. de méd. et pharm. mil.* Par., 1916, lxv, 329.

The object of Tuffier's research is to discover the best methods of amputation from the point of view of the functional value of the stump. His results are based on reports received from the military orthopedic hospitals and on his own experience of 2,301 cases observed. From a review of statistics he finds that thigh amputations are the most frequent and also that such amputations give the highest percentage of defective stumps. Of a first series of 1,731 amputated cases which he personally investigated, Tuffier finds that in 536 cases the initial operation was insufficient and that subsequent operation was necessary. Of these, 279 patients had to undergo from two to four successive amputations. These statistics show that after an amputation there is a strong possibility of a further operation. In cases of the upper limb there are 90.5 per cent of good stumps; but in the lower limb this figure falls to 69 per cent. The lower limb therefore offers the greatest handicap. The causes for this Tuffier finds is in the type of operation, its time, the site of the lesion, and the complications. Each of these factors is dealt with in detail.

The lesions which render a stump unsuitable for apparatus in 30.9 per cent of amputations are incomplete cicatrization due to ulceration or a fistula, and pain due to pressure of the apparatus; sometimes both are present.

Examination of the end-results of the different types of amputation leads Tuffier to some practical conclusions regarding their value. In the lower limb disarticulation of the hip by a racket incision gives the best prosthetic results. A thigh amputation should be as low as possible. A stump 10 cm. long is the least which gives good leverage, but it is best to leave 14 or 15 cm. of the femur.

A sub- or intratrochanteric amputation is more difficult for apparatus and gives the same functional results as a complete thigh amputation. It must not be ruled out, because it is less dangerous than

coxofemoral disarticulation. Disarticulation, with or without preservation of the patella, generally gives unfavorable results; an intracondylar amputation is better. Tuffier thinks that amputation of the leg immediately above the joint is an excellent operation which gives favorable functional results without difficulty from the stump.

Tuffier discusses the common faults in leg amputations. They should be made as low as possible; posterior strips rather than external or circular should be cut, and care should be taken that the fibula is not sectioned below the tibia.

High amputation even in the tibial tuberosity gives excellent results, even better than a thigh amputation, and Tuffier recommends it.

Tibiotarsal disarticulation with malleolar section, intramalleolar amputation, gives good functional results.

In the foot, subastragalar disarticulation, calcaneal osteoplastic amputation, and the Syme amputation are to be recommended, but not the Chopart. The Lisfranc amputation is of value.

For the upper limb the results are more satisfactory; there are only 5 per cent of troublesome stumps. The important thing is to amputate as far as possible from the shoulder. In the arm, preservation of the head of the humerus is preferable to a shoulder disarticulation. From a functional viewpoint a stump shorter than four finger-widths does not give satisfactory prosthesis. W. A. BRENNAN.

ORTHOPEDICS IN GENERAL

Brown, L. T.: A Combined Medical and Postural Examination of 746 Young Adults. *Am. J. Orthop. Surg.*, 1917, xv, 774.

This work was undertaken in connection with the examination of the entering class of Harvard College, the orthopedic research being done with special reference to the posture of the body and its relation to other physical conditions.

Schematographic tracings were made of the men. With their clothing removed, they were made to stand with their heels on a line in front of a screen; in this position profile tracings were made first in the natural position assumed by the individual, and secondly, in the best posture obtainable.

The vertical line test was employed as a standard; in those tracings which seemed to be up to the standard, it was found that a line drawn upward from the external malleolus or the mediotarsal region so that it passes through the trochanter or the middle of the thigh would also pass through the shoulder and the front of the ear.

There were four points of variation from the normal on which this series was graded: (1) variation of the head and shoulders from the vertical line; (2) a forward position of the head; (3) a relaxed abdomen; and (4) an exaggeration of the normal curve of the spine.

The standard or normal was graded A. Those who had only one or a slight variation from the standard were placed in grade B. Those who had two points of variance were graded C, and those who varied to the extreme in some or all points were classed as D.

Out of the 746 examined, there were 50 in grade A, 90 in B, 413 in C, and 193 in D.

In comparing the results with the medical examination, grades C and D were found to be more prone to sickness than grades A or B. Backache was not complained of in classes A nor B, while 26 of class C and 17 of class D gave such a history.

As regards albuminuria, grade A had 1 case, B 1 case, C 14 cases and D 12 cases.

Tonsil and adenoid operations had been done in a slightly greater number of cases in grades A and B than in C and D.

The operation for appendicitis had occurred 1½ times as often in grades C and D as in A and B, while 2½ times as many men in grades C and D as in A and B had had two or more operations.

These studies seem to lend positive evidence to the theory that faulty posture is a cause of ill health, while correct posture is conducive to health. R. B. COFIELD.

Ambrose, T.: The Treatment of Pott's Disease by Autogenous Tibial Bone Graft; Albee's Operation. *Med. J. Austral.*, 1917, ii, 413.

The advantages of treatment offered by the Albee operation for tubercular spinal disease are shown by the author. The operation is not difficult to surgeons accustomed to bone work, but some discretion should be shown in the selection of cases; the very young and weakly and those with exaggerated deformities should be carefully considered before operation is advised.

The advantage, the author states, is in lessening the time of treatment. Eminent authorities place the duration of the treatment at from five to seven years. Albee's operation enables the patient to get about without support of any kind after six to eight weeks of recumbency.

There are practically no contra-indications, according to Albee, except a septic condition of the skin over the area involved. Even abscess formation is no contra-indication to the operation.

The purposes of the operation, aside from reducing the duration of treatment, are to relieve pain and prevent further deformity.

The technique of operation is as follows:

An elliptical or quadrilateral flap of skin and fat is reflected to avoid a midline scar. The spines and intraspinous ligaments are incised with scalpel and chisel, the spines split and one-half broken off, but left attached by soft tissues. One or two spines above and below the affected area are also split as mentioned. Into the gutter thus formed is inserted an autogenous bone graft removed from the tibia. Albee insists that the graft be so cut as to include periosteum, bone, endosteum and bone-marrow. The author has had good results by using a graft from the crest of the tibia. The graft is secured in

place by strong chromic catgut or kangaroo tendon. The strong dorsal aponeurosis is then secured over the site of the graft. JOHN MITCHELL.

Funk, E. H.: Osteitis Deformans. *Med. Clin. N. Am.*, 1917, i, 451.

The author calls attention to the rarity of a disease in the fact that only three cases were noted among 38,000 admissions to the New Jefferson Hospital during a period of seven years. There are only records of 237 cases in the literature. Funk's case was a woman, white, aged 57. She complained of rheumatic pain in the upper part of her right leg and shortly afterward noticed that the thigh was bending and that there was a limp in her gait. The pain gradually became less severe, the deformity more and more marked, and the leg became shorter.

On examination the right femur showed marked thickening throughout its entire course, and a marked outward curvature. The X-ray study of the right femur showed the characteristic bone changes of osteitis deformans. The bone was unusually dense. The great trochanter and the neck of the femur had a more spongy appearance than is characteristic in the disease. There was an entire lack of bone detail in the pelvic bones around the acetabulum on both sides, indicating that these bones were involved. The skull, which was not much thickened, showed very early involvement.

The symptoms of the disease are first vague pains, usually in the extremity or back. Later there is a local bone deformity, usually a thickening and curvature of the tibia or perhaps an enlargement of the skull. A hereditary history was obtained in seven per cent of these cases. The disease occurs usually after forty years of age. Cases as early as twenty and as late as seventy-nine are on record.

The Wassermann reaction is positive in only one-fifth of the cases. Antiluetic treatment has been tried without avail. Disease of the ductless glands is supposed to be the cause of osteitis deformans. Treatment with a view of influencing the calcium metabolism is being tried, there being at present no satisfactory treatment. The prognosis as regards cure is hopeless, although as regards life the disease is often compatible with a long and active career.

J. J. KURLANDER.

Porter, J. L:. The Treatment of Rheumatoid Arthritis of the Hypertrophic Type. *Internat. J. Surg.*, 1917, xxx, 280.

While learning something definite of the underlying etiology of hypertrophic rheumatoid arthritis, the author asserts, its treatment continues to be empirical. The aim has been chiefly to relieve the pain and make the patient comfortable. Every means has been exhausted to "hunt out the focus of infection and eradicate it." The whole system has been examined for a lurking place for infection.

The author is convinced that the great mistake made in the treatment of rheumatoid joint affections has been to permit the patient to use the joints. Nature offers the mode of treatment, but it has not been recognized. The patient himself says that motion makes the pain unbearable.

The following treatment, as advocated by the author, is given as a preliminary measure to a course of investigation of the physical, chemical, and bacteriological etiology of the affection.

The patient is first put to bed. The affected part is swathed in strips of gauze saturated with this lotion: tr. opii, 30; liq. plumbi subacet. dil., 40; tr. arnicæ 50; fld. ext. hamamelidis, 60.

The joint is then covered with flannel fomentations wrung out of hot water. About this is wrapped a rubber sheet. Hot water bottles are placed upon the rubber sheet. Fomentations and hot water bottles are renewed every two or three hours or as often as they get cool. The gauze strips are moistened three times a day.

If the spine is involved or the sacro-iliac joint, knee, hip or elbow traction is applied with a weight and pulley. The spine is treated by means of a head halter making traction on the chin and occiput. In all other locations noted above, Buck's extension is used. This treatment is continued until all pain and sensitiveness have disappeared. Then the affected part is immobilized in a plaster-of-Paris cast. The duration of cast treatment is subject to the condition of the patient. If after four weeks pain and sensitiveness have not ceased, a second cast is applied. Later a brace may be made to replace the cast.

The author uses also a 3 per cent solution of formalin in olive oil in joint cases where the trouble does not cease under treatment with local applications. The injection is made immediately before the cast is applied in order to immobilize the joint as quickly as possible.

Supplementary treatment consists of general systemic treatment, rest, diet, and elimination. Often, the author believes, auto-intoxication from intestinal putrefaction of animal proteids is the cause of chronic joint inflammations. JOHN MITCHELL.

Gillette, A. J., and Chatterton, C. C.: Mechanical and Surgical Treatment of Anterior Poliomyelitis. *J.-Lancet*, 1917, xxxvii, 691.

Anterior poliomyelitis, the authors state, should be the name applied to the disease under discussion. Infantile paralysis is a misnomer, for the disease is an affection of childhood and adolescence and is rarely ever seen nowadays in infancy.

The onset is atypical. Each case may present a different method of attack. There may be fever, peripheral neuritis, nausea, etc. Again, the disease manifests itself by paralysis at the onset.

The statement is made that the profession knows more and has discovered more in the care, prevention and treatment of anterior poliomyelitis than it knows of many other diseases in which the treatment does great good. Therefore, the plea of ignorance of the disease, of its origin and treatment cannot be excused.

The symptomatology is well known. The treatment is that of any other infection in its incidence. Rest and elimination are first to be considered. Massage and electricity also have an important place in the therapy, but these are inadvisable during the painful stage. Many deformities which result are due to the careless, ignorant, or indifferent attitude of the practitioner. Mechanical treatment alone prevents and even practically cures deformities which later would have to come to the operating table.

Surgery of anterior poliomyelitis at present deals only with the chronic stage. The success of each surgical procedure depends upon the location, action, and pathology of the part involved. The authors enumerate examples of operations on tendons for the correction of deformities. Tendon operations are especially valuable in foot deformities. Tendon fixation is meeting with great success. This operation consists of burying the tendon under the periosteum of the bone in a groove prepared for its reception. This operation is useful in flail conditions of the hand and foot. Tendon transference has resulted in remarkable corrections of deformities.

The principles of tendon transference are these: (1) to use muscles that have nearly the same physiological action as the paralyzed groups; (2) to establish muscle balance; (3) to correct deformity.

Foot deformities lend themselves best to this method of treatment. The authors mention several operations of tendon transference:

1. Transference of the extensor hallucis longus and the common extensors to the heads of the metatarsal bones for claw-foot, hammer-toe and foot-drop.

2. Transference of the tibialis anticus to the opposite side of the foot for equinovarus.

3. Transference of the peronæus longus into the tibialis anticus for talipes valgus.

4. Transference of the peronæus longus into the tendo achillis for talipes calcaneus.

Myotomy is replaced by mechanical stretching. The procedure of Soutter of Boston for marked lordosis of the spine, with the thighs on the abdomen, due to contraction of the iliopsoas, deserves mention. After an incision over the anterior superior spine, all the muscles attached to the crest of the ilium are loosened and the thigh brought down from its flexed position and held with plaster.

Bone operations are necessary only in extreme cases of deformity, the authors assert. Astragalectomy as advocated by Whitman for flail conditions is useful. Arthrodesis is used most often as an aid to other operative procedures. It is of value in chronic dislocations of the hip and shoulder.

JOHN MITCHELL.

Moxey, V.: Recent Orthopedic Surgery. *Practitioner*, Lond., 1917, xcix, 462.

In Pott's disease operative fixation of the spine is done to shorten the period of recumbency and to hasten the period of cure. The methods of Albee and Hibbs have for their aim the production of ankylosis of the contiguous vertebræ. There is an element of risk in handling the patient while under the anæsthetic; the possibility of causing a fracture of the spine due to the pathological process must be considered. There is also danger of dissemination of the tuberculous process. Rutherford believes that children under five years of age should not be operated upon. Bradford holds that the splinting of a fractured spine by the bone graft, after the immediate symptoms are past, is a rational procedure.

The treatment of scoliosis by the various methods of support leaves much to be desired. Just as it is necessary to keep a club-foot for a time in an overcorrected position, so is it necessary to apply the same principle in the treatment of scoliosis. This, however, has not been found satisfactory or even possible.

In the surgery of paralysis due to injury, in complete or in most cases of non-improving partial paralysis, an ihspection of the nerve is indicated. The nerve having been found and the fibrosed ends cut away, coaptation may be secured by flexion of the limb, by freeing and stretching the nerve, or by shifting it to a new and shorter course. The nerve is then sutured. The repaired nerve is wrapped in a tube of loose fat or autogenous fascia. If coaptation is impossible even after the nerve has been stretched, much may be done in the way of muscle and tendon transplantation, e.g., the biceps or semitendinosus may be inserted into the patella for a paralyzed quadriceps.

As regards bone grafting, the use of the autogenous bone graft in ununited fractures to fill a gap or to prevent displacement in certain difficult fractures is more in favor than the use of foreign bodies such as steel plates, screws or wire. The bone graft was also used to stabilize the ankle in infantile paralysis. The graft is cut in the shape of a bone peg and driven down through the lower end of the tibia, astragalus and os calsis. The results at first were excellent, but later failed, the ankle being freely movable.

In flat-foot, Soule claims good results from a combination of arthrodesis of the astragalus and scaphoid joints, with an autogenous bone peg driven through the scaphoid into the head of the astragalus. Silk ligaments are being less used than formerly, as the silk often acts as a foreign body and the irritation it produces necessitates its removal in many instances. Spasmodic club-foot, or the so-called hysterical club-foot, is usually a varus or equinovarus, associated with more or less vasomotor changes. It is very obstinate to treatment, forcible treatment and electricity making the condition worse. As to therapy, the gentlest measures, such as warm baths and light massage, are best.

In congenital dislocation of the hip, there is no improvement over the present bloodless method of reduction, and Galeazzi claims 84.46 per cent of cures in a series of over 1,000 cases. These were cases of children under the age of four.

J. J. KURLANDER.

SURGERY OF THE SPINAL COLUMN AND CORD

Henninger, C. H.: Cord and Nerve Affections Causing Low Back Pain. *Am. J. Orthop. Surg.*, 1917, xv, 814.

Pain may be present and severe in spina bifida when the cord proper or cauda equina is anchored by adhesions in or around the sac. The pain is caused by a stretching or irritation of the nerve-roots, when the relative position of the cord and vertebræ is changed by their unequal rate of development. Sclerosis of the blood-vessels supplying the posterior ganglia is a cause of severe pain. Spinal meningeal hæmorrhage causes severe pain in the back, with sudden onset, and there is spasm of the back muscles. Hæmorrhage into the substance of the cord, if large, causes a sudden and severe pain and is followed rapidly by symptoms of myelitis. In pachymeningitis externa spinalis the pain symptoms are those of sensory root irritation or compression. The pain symptoms of acute spinal leptomeningitis often persist long after the acute stage has subsided.

In the early stages of acute poliomyelitis there is a generalized hyperæsthesia with back pains, the pains radiating to the parts subsequently paralyzed. In syringomyelia with curvature of the spine, low back pains are common following exertion. Tumors of the vertebral column, membranes and spinal cord produce local back pains which are intense, and there may be motor irritation associated. In caudal neuritis the symptoms are similar to caudal tumor. Syphilitic processes may involve any or all of the structures under consideration and may simulate any of the above nerve conditions, but as a rule low back pains are not common in syphilis.

In tabes dorsalis the girdle pains are of some diagnostic value. In multiple neuritis, pains in the back are often an early symptom, although pains are not usually common in this condition. Neuromata of the peripheral nerves in the lumbar region are an occasional cause of pain. Varicose veins in the lower portion of the meningeal sac and calcareous deposits on the inner surface of the spinal dura are among the rarer causes of pain.

Pains in the back due to injury require special consideration. There is persistent severe pain which is increased on motion. There is also rigidity of the spine and tenderness on pressure. Low back pains in this type may readily come from a state of exhaustion. The term sciatica is limited to a primary involvement of the sciatic nerve and the pain is the result of a neuritis. In addition to the pain there may be anæsthesia, muscular atrophy, electrical reaction of nerve degeneration, with loss of tendon jerk. This may be due to injury, continuous pressure, a fall on the buttock, severe muscular exertion, chronic intoxication, infections, diabetes, etc. The most severe back pains are seen in diseased processes causing pressure on a nerve-root. Rest is indicated and is possibly the best treatment for inflamed nerve conditions. J. J. KURLANDER.

Myers, T. H.: The Bone Graft in Tuberculous Disease of the Spine. *Internat. J. Surg.*, 1917, xxx, 347.

The bone graft in tuberculosis of the spine is simply a mechanical device to secure more complete immobilization of the diseased vertebræ. The author asserts that the immobilization, however, is not complete, as the articular surfaces and bodies of the vertebræ are not held, but that only the spinous processes and the laminæ to some extent become fused. He concludes that lateral support should be continued for a long time as a portoperative measure until the adjacent tuberculous surfaces may become consolidated. To the lack of such support the author believes may be attributed the cause of relapse.

From his observation of sixteen cases he concludes that bone grafts in adults last longer than in children. In some cases the graft fused with the vertebræ. He does not use the lateral splinting chips, since in one case it pierced the skin and had to be removed, and in another it remained unattached for a long time, causing pain and discomfort.

The author advises taking an X-ray of the bone from which the graft is to be taken in cases of multiple osteomyelitis, since, while the bone may appear normal to the naked eye, upon X-ray it will show foci of involvement.

The author made a study of a large number of cases of Pott's disease with paraplegic symptoms to determine the probable duration of these symptoms in cases treated with braces and rest in bed. The cases in the midorsal region were paralyzed on an average of nine and one-half months; while in those cases which were operated upon the period of paraplegia was shortened.

The results in the sixteen cases operated upon were as follows: one patient died from status lymphaticus; one patient died from an abscess connected with multiple foci of osteomyelitis; three patients showed more improvement than would probably have taken place without the operation; eleven cases were either cured or showed very much improvement.

The operation is indicated in fracture of the spine without symptoms of injury to the cord. Cases of this kind develop deformity weeks or even months after an injury. The delayed union is due to the small size of the fractured parts, which makes immobilization impossible. The author concludes that this operation will appreciably shorten the period of Pott's disease, and diminish the amount of existing and probable deformity at very little operative risk. M. A. BERNSTEIN.

SURGERY OF THE NERVOUS SYSTEM

Souttar, H. S.: Some Points Arising in Nerve Injuries. *Brit. M. J.*, 1917, ii, 817.

This paper is founded upon an experience of 200 cases observed at one of the English base hospitals. The injury has been a primary one in every case, i. e., either the direct and immediate result of the wound or some supervening condition such as an aneurism or of some necessary surgical interference. The widespread belief that many nerve injuries are secondary to inclusion in fibrous tissue or callus must be abandoned. The nerve may be completely severed with the formation of end-bulbs or a portion only may be replaced by fibrous tissue, but even in the latter case careful examination will show that some fibers at least were totally severed. That spontaneous recovery may occur is explained by the fact that one-third of the fibers of any nerve may be destroyed without any permanent loss of function. The injury being primary, suitable treatment should be begun early, and much can be done by preventing contracture, keeping muscles in good condition and keeping joints free so that favorable conditions are present when the time comes for the nerve to regenerate.

The area of analgesia will be a little less than that of pain. Occasionally one finds exquisite sensitiveness instead of anæsthesia. This indicates an interstitial neuritis and insufficient injury to the nerve to destroy its conductivity. A knowledge of the cutaneous areas supplied by the ulnar, median, and musculospiral nerves in the upper and by the external and internal popliteals in the lower extremity suffices for at least 90 per cent of the cases. Accurate charts of the area of anæsthesia must be kept and checked every few weeks, for the signs of recovery are very slow to appear. The most marked trophic disturbance is a glossiness and dryness of the skin with occasional increase of sweating. The skin is cyanosed or deep red in color, actual ulceration usually being due to accident. Deeper tissues undergo atrophy, even the bones losing their lime salts. These trophic changes are most marked in partial and irritative lesions where they may be accompanied by excruciating pain of an intense burning nature and a tenderness so severe that the slightest touch is intolerable. It is not easy to ascertain the extent of diminution or total loss of voluntary power in the muscles supplied by the nerve. This is the result of other groups of muscles imitating the action of the paralyzed ones, or the pain of a fracture may render totally inactive a group of muscles which are really intact. One must be familiar with the action of the muscles supplied by each of the principal nerves of the arm and leg. The electrical reactions can be elicited with a small induction coil and a few cells. The first symptom of beginning recovery is quickening of the characteristic slow undulatory contraction after galvanic stimulation.

A nerve injury overshadows every other in importance. Splints must be applied so that paralyzed muscles are relaxed and joints placed in the position in which they are most useful when ankylosed. Physical treatment must be carried out under supervision of an experienced staff. Massage, passive exercise with the Zander apparatus, whirlpool baths and electricity form the most important portion of the treatment unless operations are deemed necessary. The principle of the whirlpool bath is that the limb is surrounded by a stream of rapidly moving water at about 110° F. It accelerates the blood flow while gently massaging the limb, the limb after twenty minutes showing a remarkable relaxation of the contracted muscles and ligaments.

The sinusoidal and galvanic currents are the only ones employed in the electrical department. In the intervals between treatment every effort must be made to keep the paralyzed muscles relaxed, the limb warm, the atrophic skin protected from injury, and to prevent the development of contractures.

Operation should only be done at least six weeks after all danger of sepsis is past. The fibrous tissue is removed until nerve fibers can be plainly seen. Catgut sutures are used to approximate the ends. The author prefers a long incision because it may be very difficult to find the nerve-ends at all, and first isolates the nerve on both sides of the damaged portion. Usually this wide mobilization of the nerve enables one to unite the ends by direct suture. In the case of the sciatic a gap of three inches can be overcome by flexion of the knee. Where there is a large gap, there is usually a large end-bulb on the proximal end. He turns down a flap as far as the bulb, which forms a sort of hinge. The terminal half of the bulb is now amputated and the raw surface is folded over itself and sutured. In this way the living fibers are preserved to almost their extreme point and a living scaffold is formed for their downgrowth. The results of this method have been most gratifying.

For other cases it is best to use a radial nerve as a graft for bridging a gap. It is of small diameter and its removal leaves as a rule no disability. Autogenous grafts are preferable to catgut or animal nerve.

D. N. EISENDRATH.

Durocex, E., and Couvreur, A.: An Experimental Contribution to the Study of Division and Functional Restoration of Nerves. *Med. Press & Circ.*, 1917, civ, 369.

The results of a series of experiments on dogs are reported, so arranged and carried out that they are made available for elucidation of the unsolved problems of nerve restoration.

The conclusions arrived at are as follows:

1. From the motorial viewpoint the dog does not behave as does man. Division of even important

nerves, such as the great sciatic or the external popliteal, is not followed by troubles of locomotion except slightly marked and transitory ones.

2. The idea of the possibility of immediate restoration of the functions of a divided nerve is purely illusory. Restoration after long periods of intervening failure are the only real ones. In those cases in which such have been definitely established, physiology has demonstrated, and the fact has been corroborated by histologic observations, that the peripheral segment does not regain its functions until after it has been penetrated by the axones of the central one.

3. In cases of complete division of a nerve-trunk, it is necessary to have recourse to suture, and sometimes to grafting, when there has been extensive loss of substance.

4. It is necessary to free a nerve-trunk when it has been subjected to compression by proliferation of connective tissue. Such proliferations interfere with the functions of the nerve involved and also threaten the functions of the other nerves of the limb. E. B. FREILICH.

Thomas, J. J.: Neurologic Indications for and Against Operations in Traumatic Injuries Affecting the Central Nervous System. *Boston M. & S. J.*, 1917, clxxvii, 503.

In a review of the surgery of the central nervous system, Thomas emphasizes the following points:

Cases of dislocation or fracture-dislocation of the spine in all regions without signs of injury of the cord simply require fixation of the spine.

It is useless to operate in cases of complete transverse lesion of the spinal cord, unless it is found impossible to prevent slipping of the fragments by any other method.

Where there is compression of the cord by fragments of bone, operation is indicated at once.

Depressed fractures of the vault of the skull if compound should have loose fragments removed or elevated. If simple, with depression of the inner table of the skull or signs of injury to the brain beneath, operation should be done. As a rule little should be done beyond the removal of the blood-clot and the relief of intracranial pressure.

In bursting fracture of the skull, which is in the nature of a fissure, often multiple, running to the base of the skull, if associated with gradually increasing intracranial hæmorrhage, whether due to rupture of the meningeal artery, basal or other sinuses, operation is demanded for relief of the hæmorrhage.

Intracranial pressure demands relief by operation in cases with deepening unconsciousness, slowing of the pulse, blurring of the outline of the optic discs, and steadily rising blood-pressure, or an increasing pressure of the cerebrospinal fluid.

On the other hand, widespread laceration of brain tissue from hæmorrhage into the cerebral substance is influenced but little in its course by operation. The most reliable signs of this condition are fixed, rigid pupils, most often dilated, which show no reaction to light, and steadily rising temperature, which in the absence of infection is the most reliable sign of extensive destruction of cerebral tissue. It is hardly necessary to add that the presence of profound shock is always a contraindication to operation.

The author states that one should guard against advising operation in cases of apoplexy or intracerebral hæmorrhage which in falling have received an injury of the head.

He mentions still another class of cases of fracture of the skull in which operation is of value. These are the cases in which there was no paralysis and no definite reasons for operation, either exploratory or decompressive, and where the patient improves up to a certain point and then shows a persistent mental slowness, perhaps with irritability. In the few cases where he has advised opening the cranial cavity, he found a dura with an organizing blood-clot adherent. Marked and rapid improvement in mentality followed almost immediately the removal of the clot or the lessening of the tension by opening the dura when the clot was not accessible.

In deciding in favor of operation in fracture of the skull, one should always have in mind that the most important object aimed at is the relief of the increased intracranial pressure, no matter to what it may be due. G. W. HOCHREIN.

MISCELLANEOUS

CLINICAL ENTITIES—TUMORS, ULCERS, ABSCESSES, ETC.

Symmers, D.: Acute Lymphatic Leukæmia and Lymphatic Leucosarcoma; Lymphatic Leucosarcoma; Anthrax; Acute Syphilitic Glomerulonephritis; Acromegalic Giantism. *Interst. M. J.*, 1917, xxiv, 1003.

Among 5,600 necropsies performed at Bellevue Hospital in the past eleven years, there were 8 cases of lymphatic leukæmia, and of this number 5 were of the chronic variety and 3 acute. Acute lymphatic leukæmia is of great clinical interest, especially with reference to the possibility of an infective origin, and also as bearing upon a rare and apparently little known disease described by Sternberg under the title of leucosarcoma. The author details three cases of acute lymphatic leukæmia.

The term leucosarcoma was introduced by Sternberg to indicate a disease characterized by the pres-

ence in some part of the body of a definite tumor composed of lymphoid cells which are eventually poured into the blood in such numbers as to constitute a true leukæmia. Two varieties of leucosarcoma are recognized: one in which the original growth is made up of cells of the lymphocytic type, the subsequent infiltration of the blood representing a variety of lymphatic leukæmia; and a second, in which the original focus is composed of myelocytes, the discharge of which into the blood gives rise to leukæmia of the myelogenous type.

The recognition of lymphatic leucosarcoma depends upon three factors: first, the existence of a tumor which, upon microscopic examination, reveals the histologic picture of a lymphosarcoma, the cells, contrary to the usual arrangement, consisting almost exclusively of large lymphocytes with an admixture of small cells; in occasional instances, however, this order is reversed. Secondly, the original focus of growth may exist for weeks, months or years before invasion of the blood stream occurs, but involvement of the blood, when it does take place, is abrupt and the disease then progresses with extreme rapidity. Thirdly, the disease is accompanied by enlargement of the spleen, the lymph-nodes in various situations, the liver, kidney, etc., due to diffuse infiltration of lymphocytic cells to or their presence in circumscribed collections; in short, the disease, as its name implies, is a variety of lymphosarcoma with leukæmic transformation. The author details a case of lymphatic leucosarcoma.

Among animals, geographically as well as zoologically, anthrax is the most widespread of all acute infective diseases. In recent years the occurrence of anthrax in human beings has undergone a notable increase and it is now regarded by students of industrial conditions as an occupational disease of moment. In general hospital work anthrax is commonly regarded as a rare disease. The prognosis of anthrax depends upon several factors, and the mortality varies within rather wide limits; for example, the malignant anthrax œdema of the face and neck is invariably fatal, largely because of infiltration of the soft tissues around the larynx, pharynx, and œsophagus. In the same way the wool-sorter's disease, which is an anthrax septicæmia with intense pulmonary and cerebral symptoms, and anthrax of the intestinal tract, are likewise deadly. The malignant pustule, on the other hand, not infrequently heals and the patient recovers. In the case of malignant pustule of the face, however, the mortality is five times greater than that of an extremity, in which only about 5 per cent of cases terminate fatally.

There are several points in the pathology of the anthrax pustule that are of practical value in determining the method of treatment. At the outset the malignant pustule is essentially a localized lesion and the causative micro-organisms are confined within a limited zone, at least for a time, invasion of the blood occurring as a late event. If taken sufficiently early, therefore, excision of the pustule offers the best chance of recovery. At the same time, it is unwise to incise the œdematous tissues in the immediate vicinity of the pustule, for the reason that the gelatinoid infiltration, the so-called anthraco-mucin of the lymph-spaces, is of the nature of a protective mechanism; in the œdematous area the anthrax bacillus is rarely to be found. Incision, therefore, not only does not drain the affected region of inimical bacteria, but is actually harmful, opening the way to secondary infection and breaking down a barrier to the spread of existing infection.

The specific anti-anthrax serum of Sclavo is said to have reduced the mortality to a marked extent. More recently still, the government authorities in the Argentine have been using normal bovine serum intravenously in large doses, and it is said that the results are even more favorable than from the use of specific antiserum. The author reports two cases of malignant pustule occurring on the chest wall.

In early secondary syphilis, transient irritation of the kidneys is not uncommon. On the other hand, syphilis is sometimes the cause of acute inflammatory changes in the kidney of such nature and extent as permanently to disable the kidney or even to cause death; in bedside work and in the experience of the necropsy room, acute syphilitic nephritis is exceedingly rare. In the case detailed by Symmers, death occurred after a brief illness, and the changes in the kidney were of the same type as those encountered in the acute nephritis of scarlatina.

Hyperactivity of the anterior lobe of the pituitary coming on before the completion of epiphyseal ossification results in giantism; that is to say, the individual is overgrown, but well-proportioned. After epiphyseal ossification is complete, however, hyperactivity of the hypophysis results in acromegaly with or without giantism. That the relationship between acromegaly and giantism is close is shown by the fact that a considerable percentage of acromegalics are giants, and that a still larger percentage of giants develop acromegaly.

The pathologic changes in acromegalic giantism may be grouped as follows: (a) changes in the bones and cartilages; (b) enormous increase in the size of certain viscera, notably the heart, lungs, liver and spleen; (c) atrophy of the genitals; (d) disease of the pituitary, such as adenomatoid hyperplasia, replacement by syphilitic or tuberculosis granulomata, cysts, hæmorrhage, etc.; (e) finally, acromegaly is not uncommonly attended by changes in the ductless glands other than the pituitary. Status lymphaticus is sometimes recognizable in acromegalic subjects. Acromegaly usually begins in the third or fourth decade. It is rather more frequent among men than women. Heredity appears to play a rôle. For example, it has been observed in both parents and a child, in father and son, in father and daughter, in mother and daughter, and, in the case outlined by Symmers, in two brothers. The author describes in detail the necropsy findings in his case of a Lombardy giant of 8 feet and 10 inches.

P. G. Skillern, Jr.

Giffin, H. Z.: Observations on the Treatment of Myelocytic Leukæmia by Radium. *Boston M. & S. J.*, 1917, clxxvii, 686.

The main points are given in the author's summary as follows:

1. Thirty consecutive cases of myelocytic leukæmia were treated by means of the surface application of radium element over the enlarged spleen. A dosage of 50 and 100 mg. was used. The protection finally adopted was 2 mm. of lead and 0.5 of an inch of wood. The splenic area was mapped out into squares after the manner described by Ordway, and the radium was applied over each square for from two to four hours, with a total exposure usually of twenty-four or thirty-six hours. The exposures were repeated every week until a satisfactory remission was obtained.

2. A certain degree of general improvement, together with reduction of the size of the spleen and of the leucocytic count, occurred in every instance, even in the most advanced and toxic cases. Marked temporary improvement occurred in 26 patients, and a remarkable improvement in 13. It is impossible satisfactorily to discuss the subsequent histories of these cases at this time.

3. Hæmorrhage ceased as a rule after one or two series of exposures. In two instances, hæmorrhage occurred after radium exposures when it had not occurred previous to treatment. In these instances the hæmorrhage seemed to be the result of overexposure. An anæmia also developed; both the hæmorrhage and the anæmia were successfully combated by means of transfusion.

4. In 25 patients there was definite improvement of the anæmia concomitant with the improvement of the general condition. The reduction of the number of leucocytes was chiefly due not only to an absolute but also to a striking relative fall in the myelocytes; there was a striking fall in the absolute count of polynuclears, while their relative percentage remained approximately the same. There was also a marked fall in the absolute count of small lymphocytes.

5. Surface exposures of radium over the spleen of myelocytic leukæmia usually effect a very rapid reduction of the size of the spleen, a fall of the leucocyte count, improvement in the general condition and, together with transfusion, constitute at present the most effective temporary measure in the treatment of the disease. ADOLPH HARTUNG.

Hull, A. J.: The Paraffin Treatment of Burns. *Brit. M. J.*, 1917, ii, 788.

Various preparations of paraffin have been made under the author's direction containing acriflavine, brilliant green, chloramine-T, etc., dissolved in the paraffin base. Another direction in which the new antiseptics have been given scope for improvement has been the treatment of the burn by an antiseptic before the application of the paraffin. The results following this modification have been so satisfactory that it has been adopted as a routine method.

The burn is first washed with normal saline; 1 in 1,000 acriflavine solution or proflavine has now been substituted. The burn is dried with gauze or the electric drier. A layer of paraffin is painted over the burn, being applied at a temperature of 50° to 60° C. A thin layer of wool is placed over the first layer of paraffin and a second layer of paraffin at the same temperature is painted over the wool. A dressing of wool and bandage is applied over the paraffin dressing and the dressing changed every twenty-four hours. It is important to paint or spray on a sufficiently thick layer of paraffin. If the temperature of the paraffin is too high the layer is apt to be too thin. The efficacy of this treatment depends largely upon the mechanical effect of the paraffin, the epithelium being conserved from damage, and the tissues held at rest by the splint-like action of the dressing.

The addition of antiseptics to the paraffin preparation gains better results than preparations without antiseptics. The first antiseptic to be extensively used was eucalyptus oil, which, in conjunction with beta-naphthol, is still used in No. 7 paraffin.

Scarlet red paraffin has given satisfactory results in general use. Burns which have been treated with No. 7 paraffin occasionally become sluggish and present unhealthy granulations; it was therefore changed to scarlet red paraffin. The burns have become clean and show a tendency to heal; the result is great acceleration in healing.

Flavine paraffin has given very satisfactory results. Paraffin preparations of brilliant green and chloramine-T have not been satisfactory, the antiseptics being difficult to incorporate in the paraffin. The results of acriflavine applied in the form of solution followed by the application of No. 7 paraffin have been so good that the use of special preparations has been discarded with the excepiton of acriflavine paraffin and scarlet red.

The effect upon recovery of the application of various antiseptic solutions previous to the application of the paraffin has been studied. Eusol accelerated the cleaning of the burn but was too irritating. Brilliant green also accelerated cleaning the burn but caused unhealthy granulations. Acriflavine cleans the surfaces well and produces a healthier type of granulations. Scarlet red is only used, in 10 per cent solution, when the burns are clean and require stimulation.

The most satisfactory treatment has been the preliminary painting of the surface of the burn with aqueous flavine solution, 1 in 1,000, followed by the application of No. 7 paraffin. In cases of long duration scarlet red, 1 per cent, is substituted for the flavine solution.

The formula for Paraffin No. 7 calls for: resublimed beta-naphthol, 0.25 per cent; eucalyptus oil, 2 per cent; olive oil, 5 per cent; vaseline, 25 per cent; paraffinum durum, 67.75 per cent.

V. C. HUNT.

Macleod, N.: A Preliminary Note on X-Ray Detection of the Presence of Cloth in Wounds. *Brit. M. J.*, 1917, ii, 791.

This preliminary report is based on the discovery, by means of a stereoroentgenogram, of a piece of reed *in situ* in a leg after injection of bismuth emulsion into a sinus leading to it; it had not been detected by a similar examination made prior to the injection. It is believed that pieces of cloth in fresh wounds, or old ones that refused to heal, can be similarly demonstrated. To substantiate this contention, the author thrust a piece of khaki cloth into the interior of a lump of ox liver, injected it similarly to the above and was able to distinguish clearly the texture of the cloth. ADOLPH HARTUNG.

Duane, W.: Methods of Preparing and Using Radio-Active Substances in the Treatment of Malignant Disease, and of Estimating Suitable Dosages. *Boston M. & S. J.*, 1917, clxxvii, 787.

This report is from the Huntington Hospital, Boston, where about five hundred new cases of malignant disease are seen each year.

Radium belongs to the group of metals, but is unstable to a certain degree in that it is transformed into another substance, a chemically inert gas, called radium emanation. It would require 1,700 years for half a given quantity to disappear. The emanation transforms itself into a substance called radium A, half a given quantity of emanation disappearing in 3.85 days. Radium A changes into radium B, half of A changing in 3 minutes; B changes into C, half disappearing in 26.8 minutes; C changes to D, half disappearing in 19.5 minutes, and so on up to radium F, which is the last in line and known as polonium, and which was the first to be discovered. Radium A, B and C, etc., deposit themselves on anything with which they come in contact and are known as "deposited activity."

By radio-active substances is meant substances that continuously emit peculiar types of invisible rays that differ substantially from light and heat rays. The radiation, if sufficiently intense, destroys tissues. Radium C produces by far the most penetrating rays. Radium tubes are not used until the rays have had a chance to penetrate the walls of the container and the radium is then only used to produce a certain amount of emanation, and this in turn A, B, and C. The deposit of radium B and C can be obtained as follows:

1. The emanation may be extracted from the radium and pressed into a glass or metal container of any desired shape and size, and the radium A, B, and C allowed to accumulate. The emanation if left in the tube prolongs the activity time, but does not add to the penetration.

2. Radium A, B, and C may be deposited on sheets of metal or other substances by leaving them for several hours in contact with the emanation.

3. Radium A, B, and C may be dissolved in water, either by dissolving the purified emanation or by depositing the radium A, B, and C on grains of salt, for instance, and dissolving the salt in the liquid. A large amount of activity can be put in a few drops of liquid and this injected into the blood stream.

The apparatus described includes:

1. A system of glass tubes and reservoir for purifying the radium.

2. Tubes and containers for the radium.

3. An instrument for accurately measuring the quantity of the radio-active substance in the application on the tissue.

4. An instrument for roughly and rapidly estimating the quantity of radio-active substances in tubes and applicators.

5. An instrument for detecting the presence of radio-active substances. This is used in finding lost tubes and determining if tubes previously used are intact.

The unit of measurement of radium is the curie, which is the quantity of emanation in equilibrium with one grain of radium element.

One of the advantages of using the emanation instead of the radium is that it can be put into much smaller tubes and a greater variety of size and shape can be obtained.

Gauze is at times wrapped about the applicators, as it cuts off the secondary radiation coming from the surface of the lead, which is not very penetrating and would cause irritation, and it raises the applicator up from the surface of the skin, thus reducing the amount of radiation absorbed in the skin as compared with the amount absorbed at a distance below the surface.

The following cases are reported:

1. Epidermoid carcinoma recurring after operation. Small glass tubes containing from 1 to 9 millicuries of radium emanation were inserted and remained in place from ten days to two weeks.

2. Epidermoid carcinoma. Glass tubes were inserted through a trocar into the tissues. An emanation from 2 to 10 millicuries was used, remaining in place about two weeks at a time. During the later part of the treatment steel tubes containing 15 to 34 millicuries were used. At the end of the treatment microscopic examination showed no evidence of new-growth.

3. A case of keratosis, widely distributed. Glass and steel tubes were used, the glass tubes for two or three weeks, and the steel tubes from one-half to one and one-half hours. Emanation varied from 14 to 47 millicuries.

4. Superficial carcinoma of the breast. During three years the patient received 64 treatments of emanation, varying up to 142 millicuries, lasting from one to three hours.

5. Sarcoma of the face. In 10 months 22 treatments were given, varying up to 59 millicuries.

6. Malignant lymphoma. Gamma rays only were used. The dosage was from 31 to 550 millicuries, with an exposure of from 8 to 48 hours, a total of 93,756 millicurie hours.

7. Myelogenous leukæmia. A marked reduction in white blood-cells and the size of the spleen followed.

All the cases treated above showed very satisfactory results. C. A. BOWERS.

Brookover, C.: The Peripheral Distribution of the Nervus Terminalis in an Infant. *J. Comp. Neurol.*, 1917, xxviii, 347.

This discussion is based upon the study of two series of sagittal sections of stillborn negro infants at about full term. The tissue was prepared by Huber and Guild's modification of Ransom's pyridine silver method.

The author summarizes his work by saying that the peripheral nervus terminalis is so large in man that it may be said to be hypertrophied as compared to the known development in other mammals, without appreciably increasing its central root.

In addition to many cells in the ganglion terminale it contains about fifteen hundred cells peripherally under the nasal mucosa. Though disposed in three or four chief rami emerging from the lamina cribrosa, there is a vast network of interlacing bundles deep to the main arteries. Some of the fibers trail over the walls but the method of treatment by the pyridine silver technique does not reveal the ultimate endings. There is considerable evidence that the interlacing rami of the nasopalatine nerve send a bundle of fibers of considerable size through the cribriform plate to establish a sympathetic chain connection posteriorly by way of the sphenopalatine nerve and ganglion. M. M. MILLER.

Erlanger, J., Gesell, R., Gasser, H. S., and Elliott, B. L.: An Experimental Study of Surgical Shock; a Preliminary Report. *J. Am. M. Ass.*, 1917, lxix, 2089.

The methods used in producing shock were the following:

1. Exposure and manipulation of the abdominal viscera. Evisceration did not hasten shock development, nor did the removal of the abdominal sympathetic chain and section of the splanchnic nerves some weeks prior to the experiment.
2. Partial occlusion of the inferior vena cava.
3. Occlusion of the thoracic aorta.
4. Injection of epinephrin until the peripheral flow was almost zero.
5. Plugging the portal radicles to the liver.

The authors conclude from the procedures that processes are started peripherally that eventually lead to shock; that the abdominal area is scarcely more potent in shock production than other parts of the body of comparable vascularity; that the sole primary disturbance leading to shock is not the retention of blood in the veins and capillaries of the splanchnic area nor failure of the vasomotor center; that the reduced pressure is to be attributed to a reduction in the effective volume of blood; and that this pressure reduction is accomplished by reducing for some time the blood supply to a considerable part of the body.

The authors develop from the above conclusions the following working hypothesis:

Continued deficient blood supply starts a more or less extensive reaction, possibly of the nature of an inflammation, in which engorgement of the small veins and capillaries and transudation of the plasma are two of the early consequences. If acidosis occurs, might not it be the result of deficient oxidation which the deficient blood supply undoubtedly has in its train? Under the influence of the low blood-pressure of shock, the heart, while still capable of considerable exertion, has not the normal reserve, the vasomotor center does not respond so quickly to reflex stimulation, and the respiratory center is working very close to the limit of viability.

The causative factor of shock may be a reduced circulation brought about possibly by the action of pain stimuli on the vasomotor mechanism, together with a certain amount of hæmorrhage. However, a peripheral constriction either by direct or reflex stimulation of the vasoconstrictor center has not as yet been successful in producing shock experimentally. H. J. VAN DEN BERG.

Mixter, S. J.: Some of the Unsettled Problems in Surgery. *J.-Lancet*, 1917, xxxvii, 759.

In using the Carrel-Dakin treatment, the directions of those who have studied the method should be followed implicitly before making improvements and changes.

The discussion on cholecystostomy versus cholecystectomy has not been settled, but all agree that drainage is much safer in the hands of an inexperienced surgeon and that certain desperate cases must be drained if they are to be saved. The value of excision over gastro-enterostomy and vice versa in duodenal ulcer has not been agreed upon. The fact that cancer in this region is due to previous and long-continued benign ulceration would lead one to believe that in all cases where the ulcer has existed for a considerable period of time, excision is the most radical method of cure, as it is absolutely impossible to examine microscopically all such ulcerations at the time of operation. The greater mortality from pylorectomy, however, makes many operators prefer the simpler operation of gastro-enterostomy.

The surgery of the large intestine has been and is a fruitful topic of discussion, though a reasonable solution is nearer at hand than it was a few years ago. Cancer in the intestinal tract can be radically cured in certain cases. The results now obtained in resection of the large intestine, the rectum and the stomach for cancer are far beyond what could have been hoped for a few years ago, owing to the progress in the operative methods, including the avoidance of shock and deaths from anæsthesia.

Cancer of the mouth and tongue is now being largely removed by the cautery instead of the knife, with increasingly good results. Serum therapy has

given some definite results and should be tried in all cases of sarcoma, inoperable or postoperative, but this treatment in the more common infections is still far from being sure or upon a scientific basis. Radio-active rays misused have sacrificed thousands of lives; but these rays have also brought infinite relief and sometimes cure when used in proper cases and in a proper manner.

One of the most important problems is the care and rehabilitation of the vast army of men who will return from the war crippled, deformed, blind and disabled on account of injury, exposure, or poison gases. Care of the soldier will result in greater care in the treatment and subsequent training of those injured in civil life. E. B. FREILICH.

SERA, VACCINES, AND FERMENTS

Shields, C. L.: A Complement Fixation Test for Tuberculosis. *Northwest Med.*, 1917, xvi, 364.

Shields discusses a complement fixation test for tuberculosis that he considers very valuable.

The antigen used in the test is prepared by grinding many different strains of the tubercle bacillus in sodium chloride. This detects on active antibody specific to tuberculosis. This antibody is not found in normal individuals nor in individuals with healed tuberculous lesions, but only in those with active tuberculosis.

In a large series of patients the results, as recorded by Miller and Zinsser, showed a positive reaction in 96 per cent of all active cases and a negative reaction in all non-tuberculous and normal patients. It was also negative in cases of arrested tuberculosis.

In a series of 100 serums tested by the author, there were 9 positive reactions in 56 syphilitic serums, and 8 known tuberculous serums gave negative results. Of 23 cases presenting no definite signs, but suspected as being tuberculous, 12 were positive and 11 negative. JOHN W. TURNER.

Archibald, R. A.: A Review of Some of the Later Developments Along Immunological Lines. *Calif. St. J. Med.*, 1917, xv, 464.

The article is a condensed technical review of the recent developments along immunological lines, deductions from which the author applies to the phenomena exhibited in infectious diseases. While it is admitted that the clinical manifestations of a disease are such that the source of the toxic element can frequently be designated, yet the clinical symptoms of many different types of infection and toxæmias are so similar that other factors which are of equal importance must not be overlooked. The toxin or toxins of an infectious organism are not solely responsible for the pathological changes seen in the tissues during the progress of an infectious disease.

The author cites tuberculosis, typhoid, and pneumonia as types of infectious diseases characterized by great productive changes or cellular proliferation. The number of new cellular elements formed during the course of these diseases may equal the number of specific organisms present. The toxins and end-products of the metabolism of these newly formed cells are as much of a tax upon the patient as the toxins evolved from the bacteria.

Specific treatment therefore aimed at the production of immunity does not provide for the neutralization of the toxic end-products which are the result of parenteral digestion of the individual's own serum and tissue proteins. Specific antibacterial preparations, accordingly, no matter how efficacious in the destruction of bacteria, cannot in themselves be self-sufficient in the treatment of infectious diseases. ELLIS FISCHEL.

BLOOD

Minot, G. R., and Lee, R. I.: Treatment of Pernicious Anæmia, Especially by Transfusion and Splenectomy. *Boston M. & S. J.*, 1917, clxxvii, 761.

The authors have made a careful study of 96 cases of pernicious anæmia seen in the past three years. Before discussing the treatment proper of pernicious anæmia, differential diagnosis, blood destruction and blood formation, red cell destruction, bone-marrow stimulation and bone-marrow threshold are considered in reference to the rôle each plays in the effect of treatment.

In discussing various types of the disease, the authors state that the effect of therapeutic procedures will ultimately depend upon the reserve power of the marrow and the degree of erythrocytic destruction. On account of the natural tendency to remission in true cases of pernicious anæmia it is difficult to judge benefits directly attributable to therapeutic measures. The worst cases are those with marked pouring out of all marrow elements, while those that are usually most affected by therapeutic measures are the types which frequently do well spontaneously.

The authors recognize the following five classes which often merge one into the other:

1. Acute cases terminating fatally in a few months, with varying degrees of blood destruction.

2. Cases characterized by marked or fair remissions, from one to fifteen in number, usually with considerable hæmolysis which is more marked in relapses and sometimes not abnormal during remissions.

3. Cases with a considerable degree of hæmolysis, chronically present, with slow and never very striking remissions, also, except terminally, without very serious relapses. This class is also usually characterized by an enlarged spleen. The condition resembles acquired hæmolytic jaundice and is more favorably affected by splenectomy than by other forms of treatment.

4. Distinctly chronic cases that slowly become worse with very mild remissions.

5. Continuously chronic cases that very slowly grow worse usually with no remission and associated

with slight increased red cell destruction and a sluggish inactive marrow.

It was the experience of the authors that cases with enlargement of the spleen and liver ran a more favorable course than those without such enlargements. These cases did well as a rule after splenectomy.

Regarding general treatment and the use of arsenic, the authors lay stress upon the importance of general measures, such as rest in bed, freedom from mental worry and strain, etc., which are clearly indicated since they prolong life and help to cause remissions. The exact effect of arsenic upon bone-marrow or the destruction of red cells is still undetermined. The authors are inclined to believe that it has no especial influence, but they see no harm attributable to its use.

They made 115 observations upon the effect of treatment by transfusion and splenectomy. Transfusions have been used in relapses to relieve symptoms and with the hope of bringing about a remission. They have been given every three to seven days, in comparatively small quantities, or one to three times seven to fourteen days apart. Much space is devoted to the results obtained in the cases in which transfusion was used, together with indications for its use.

The authors found that though a more profound change in the blood picture occurs after splenectomy than by any other means, yet the results have not been as great as was first expected, and are in no way to be compared to the marked improvement from this procedure in hæmolytic jaundice. Clinically the patients in whom splenectomy acts favorably show quite rapidly improvement in looks and feelings. The red count and hæmoglobin may rise rapidly or the rise may be delayed for from three to six weeks; improvement in the general condition may be seen some time before the improvement in the blood picture is noticeable.

Seventy-five per cent of all reported cases following splenectomy have shown definite improvement for three months, which has continued for six months in 65 to 70 per cent of the cases; remissions of more than a year are probably between 10 and 20 per cent. The operative mortality of reported cases is about 15 per cent; the authors claim that with better technique and in selected cases it should be from 3 to 5 per cent.

In the selection of cases for splenectomy those of the more hæmolytic types of the disease, especially those with enlarged spleens, usually do well. The rarer cases with chronic blood destruction and active marrow, with no increased fragility of the red cells to salt solutions, derive more benefit from splenectomy than appears spontaneously.

If transfusion has benefited a patient, splenectomy almost always will cause greater improvement; no improvement from transfusion does not always mean that there will be no benefit from splenectomy. With hæmoglobin below 30 per cent and the red count about 1,500,000, the risk of operation is great; these cases should have a transfusion before splenectomy. Transfusions should be done some days previous to splenectomy because there are instances where a combination of both procedures has caused more of a reaction than was to be expected from either alone.

In regard to the time of operation, splenectomy should not be done during a down wave of the disease or in a severe relapse. The operation gives its best results when the course of the disease is stationary or the patient is gradually improving. It is not a procedure of desperation and should never be done as an emergency; it should be reserved for selected cases in good operative condition and in a suitable stage of the disease for operation.

In regard to transfusion following splenectomy, it is believed that splenectomized cases responded better to transfusion than others.

In regard to treatment by the roentgen ray, the experience of the authors is inconclusive; they have seen no benefit which could be directly attributed to the action of the rays.

In their summary of this study of 96 cases of pernicious anæmia, the authors believe that there is no known treatment that cures. The diagnosis is not to be made on a blood smear alone and unfortunately it is seldom made early; transfusion and splenectomy offer the best means for inducing remissions, though a remission can occur spontaneously, as marked as those inaugurated by these procedures; no case is too sick for transfusion. Splenectomy is a palliative operation; it is more frequently followed by good remissions than are any other forms of treatment, but should be reserved only for selected cases in certain stages of the disease. It is a serious procedure, never to be urged upon the patient, but may be advised with the clear understanding that its effect is only temporary. Transfusion and splenectomy cause the patients to improve and to live more comfortably, and perhaps in certain instances prolong life. Probably transfusions begun early, so that patients do not remain extremely anæmic for long, will give the best ultimate results.

ELLIS FISCHEL.

Robertson, L. B., and Watson, C. G.: Further Observations on the Results of Blood Transfusion in War Surgery. *Brit. M. J.*, 1917, ii, 679.

Since a previous paper, blood transfusion has been used in cases of severe primary hæmorrhage, accompanied by shock. In four cases of this series the citrate method was used; one case was done with the Unger two-way stopcock, the remainder by the Lindeman syringe-cannula method.

The results have shown that certain cases heretofore considered as inoperable and others as exceedingly bad surgical risks may often be revived to a degree which not only permits of radical operative measures, but insures a good prospect of recovery; also that in other cases in which the post-operative condition is one of progressively increasing

shock, due to the initial loss of blood, and to the severity of the operative measures required, blood transfusion is a permanent resuscitative measure of extreme value.

If the bleeding can be controlled, the ideal time is as soon as the patient is seen. If operative interference is necessary before the bleeding can be controlled, blood transfusion may be carried out before the patient leaves the operating table. Clinical observations appear to show that some degenerative changes take place in the organism when the exsanguinated condition persists for more than a few hours. For this reason it is advisable to give the blood as soon as possible after admission, if circumstances permit.

Other great factors in the production of shock are loss of body heat and physical exhaustion, which after transfusion can be controlled with warmth and rest for a few hours before operation. Acidosis incident to the shocked condition may be treated by the administration of sodium bicarbonate.

The benefit of blood transfusions has its limitations, and it should not be used indiscriminately.

The amount of blood transfused has usually been 700 to 1,000 ccm., sometimes less and at times more, but the most immediate and lasting results have been obtained with the large amounts. Cardiac dilatation has not been observed.

A wounded man who has lost much blood and has a blood-pressure below 90 mm. mercury is not a good subject for operation; with a blood-pressure below 70 mm. mercury he is in a precarious condition. In the cases of severe primary hæmorrhage accompanied by shock, blood transfusion frequently produces an immediate and almost incredible improvement.

The change from a pallid, sometimes semiconscious patient with a rapid flickering pulse to a comparatively healthy-looking, conscious and comfortable patient with a slower and fuller pulse is dramatic evidence of the value of the transfused blood. In those cases in which readings were taken during the subsequent forty-eight hours it was shown that the rise in blood-pressure was well maintained.

The author reports 26 cases of primary hæmorrhage in which transfusion was done. The results are classified as follows: life saving, 22 cases; immediately beneficial, but died from infection or operation, 9 cases; no benefit, 3 cases; death by hæmolysis, 2 cases. V. C. HUNT.

Kritchevsky, I. L.: Hæmolysins of Vegetable Origin. *J. Exp. Med.*, 1917, xxvi, 669.

Kritchevsky has already reported the results of an investigation on the bacterial agglutinins, precipitins, bacterial and albugineous, and hæmagglutinating substances found in the sap of cotyledon scheideckeri. This article deals with the hæmolysins which Kritchevsky discovered in the sap of this plant.

His experiments show that hæmolysis is observed only in sap that contains hæmagglutinins; when the cotyledon sap is deprived of hæmagglutinins it does not possess hæmolysins. Moreover, hæmolysis never appears in cotyledon saps and the hæmolytic power is measured by the intensity of color of the liquid covering the erythrocytes. According to von Liebermann, ricin also never gives complete hæmolysis. The experiment can be performed with ordinary test-tubes, but Kritchevsky used centrifuge tubes as they permitted a more rapid procedure, and he submitted the suspension to centrifuging after half an hour at 37°.

It has been stated that the agglutinated erythrocytes were thoroughly shaken in cotyledon sap; and the agglutinated clot again furnished a homogeneous suspension, at least macroscopically homogeneous. This restoration of the original suspension was necessary in order to obtain hæmolysis, as was shown in one of the experiments.

Two other series of experiments led the author to the conclusion that either a definite quantity of red cells is able to bind only a quantity of hæmolysins which is insufficient for complete hæmolysis, or that the red cells are so modified during the process of binding the hæmolysins by other substances contained in the sap and also by the red cells themselves that they can no longer be completely hæmolyzed.

He proves further that 0.5 ccm. of a 10 per cent suspension of sheep corpuscles is unable to bind the total amount of hæmolysin contained in the sap. Further experiments also confirmed the hypothesis that the same receptor formed the object of binding for the vegetable hæmolysin as well as for the hæmolytic amboceptor, and that in consequence the two hæmolysins could not be bound with the red cells simultaneously, because the hæmolysin possessing a greater avidity left no place for the other one.

From his entire series of experiments Kritchevsky was able to draw the following conclusions:

The sap of cotyledon scheideckeri possesses hæmolysins for the red corpuscles of different animals.

The hæmolysins of vegetable sap can be bound by erythrocytes and cannot be separated.

A definite quantity of erythrocytes is able to extract from the sap only a part of the hæmolysins it contains.

The quantity of hæmolysins in the sap of different plants is subjected to the same fluctuations as that of bacterial agglutinins, precipitins, and hæmagglutinins.

As the hæmolysins are bound by erythrocytes, the hæmolysis can take place not only at 37° but also at 15° or 16°.

The thermostability of the hæmolysins varies from one individual plant to another.

In many cases the vegetable sap loses its hæmolytic properties at a certain temperature and recovers them at a higher one.

The vegetable sap is unable to produce complete

hæmolysis of erythrocytes, but the sap of many plants acquires the power to dissolve red corpuscles completely after one hour of heating at 134° and 144°.

Erythrocytes modified by cotyledon sap cannot be dissolved completely even by distilled water.

The agglutination of the erythrocytes and their hæmolysis are conditioned, probably, by different substances.

The hæmolytic amboceptor and the hæmolysin of cotyledon scheideckeri can be bound with the same receptor of the erythrocytes.

GEORGE E. BEILBY.

BLOOD AND LYMPH VESSELS

Jones, E. G., and Waits, C. E.: Treatment of a Double Femoral Aneurism by Proximal Occlusion with an Autoplastic Fascial Flap. *Surg., Gynec. & Obst.*, 1917, xxv, 689.

The authors partially constricted the primitive femoral with an autoplastic flap dissected from Poupart's ligament for the purpose of treating two aneurisms in the thigh. Twenty-six months after operation the patient was well and showed no signs of the aneurisms. Functioning in the leg remained normal, except for some numbness about the calf.

In order to discover if such a band would be dangerous from the standpoint of erosion and hæmorrhage, and if, when so applied, there would be material danger of gangrene or loss of function, they treated the primitive femoral twenty-four times in dogs with uniformly satisfactory results.

They also believe that the partial occluding band results in gradual complete occlusion of the vessel. Histologic examinations from twelve to fourteen weeks after operation show the fibrous band grafted about the circumference of the vessel.

EXPERIMENTAL SURGERY AND SURGICAL ANATOMY

Bland-Sutton, J.: Misplaced and Missing Organs. *Brit. M. J.*, 1917, ii, 607.

The author describes an intrathoracic stomach presenting unusual features. A woman, aged 26, complained of gastric disturbance so severe as to justify an examination with X-ray and an opaque meal. Radiographs disclosed the shadow of a body above the diaphragm, displacing the heart to the left.

The patient underwent operation. The parts were exposed by a median supra-umbilical incision, but no stomach was visible. A cleft was found in the diaphragm on the right side of the œsophagus from which the small intestine emerged. The stomach was lying in a pouch extending into the thorax. It was withdrawn and was seen to be of normal size, but with very thick walls; on being released, it at once slipped out of sight into the pouch.

Examples of misplaced appendices, undescended cæcum, pelvic kidneys, mastoid teeth and double skulls are given. EDWARD L. CORNELL.

Brooks, B.: Studies in Bone Regeneration. *Ann. Surg.*, Phila., 1917, lxvi, 625.

Brooks has conducted a series of experiments on the regeneration of bone. These experiments show conclusively that a defect in the shafts of a bone may be quickly and completely regenerated after placing within the defect an autotransplant of living bone with periosteum and endosteum.

The regeneration of bone to repair the defect originates in portions of the normal bone regenerating elements of the graft which remain viable. He questions whether the transplanted bone matrix and bone-cells retain their viability for a short period of time. The identity of the transplanted bone, however, is ultimately lost as a result of absorption and replacement by new bone.

If the periosteum and endosteum together with the adjacent layers of bone are removed from the transplant, it has no osteogenetic properties. If an implant of dry sterile bone is placed in a defect in the shaft of a bone, there is no evidence that such an implant aids in any way the regeneration of the defect. The implanted dead bone neither results in a metaplastic production of bone from the surrounding tissue, nor does it possess any specific property of conducting bone growth across the defect in the bone shaft.

He believes that it is no longer a matter of question that the preservation of the periosteum and endosteum on a free bone transplant is the most important factor in determining the success of the transplant. He offers the following reasons for his belief:

1. The periosteum serves to direct and protect new bone growth.

2. The periosteum aids in securing early nourishment for the transplant.

3. The periosteum is the osteogenetic element of the bone transplant.

He states that there are both external and internal factors which determine the regeneration and growth of bone from a free transplant. The power of a free bone transplant with periosteum and endosteum to regenerate bone is an intrinsic property. The ability of the regenerating bone to continue the production of new bone until a functioning bone is completed is determined by external influences. He applies the term "functional demand" to the combination of the external influences.

He concludes his article by saying that a free bone transplant with the periosteum and endosteum is certainly the only type of implant which may be expected to be the source of new bone formation. An implant of sterile dry bone or a transplant of living bone without periosteum or endosteum may be used as a means of fixation; or in cases of small defects in bone, such an implant may ultimately accomplish the desired result of regeneration of the defect by being absorbed and replaced by new bone originating from bone adjacent to the implant. Such a result may not be accomplished in cases of large defects. The osteogenetic power of a free

bone transplant varies with the age of the individual and general constitutional conditions. Results in children are more likely to be better than in old or poorly nourished individuals.

Two possibilities of devising means for increasing the osteogenetic power of the transplant have been suggested:

1. The use of a transplant from another individual in which there is greater potential power of osteogenesis.

2. The possibility that the osteogenetic power of the graft may be increased by causing artificial injury to the bone from which the graft is to be taken and thus causing new bone formation and subsequently transplanting the growing bone.

Experiments are now in progress to determine the value of these methods. G. W. HOCHREIN.

Nutt, J. J.: Neurotization of Paralyzed Muscle by Muscle Grafting; a Laboratory and Clinical Study. *J. Am. M. Ass.*, 1917, lxix, 2082.

The idea is proposed of effecting partial return of function to muscles paralyzed by poliomyelitis by muscle grafting and consequent extension of the motor nerves from the unaffected muscular tissue.

Former operations for tendon transplantation in local paralyses give evidence that the destruction of the intermuscular septum and sarcolemma allows projection of nerve fibers from sound to paralyzed muscle, and resultant restoration of function.

A laboratory report is given, with illustrative sections, to support this theory. The sections are obtained from cases of experimental paralysis by nerve section, followed by muscle grafting and partial restoration of function, subsequent sectioning showing new nerve fibers from sound to paralyzed muscle, and restoration of normal histological elements of the muscle fibers.

Operative technique is described and 16 cases are cited, in which 7 promise good results. Success of this procedure is more assured by early operation, before all intelligence of the muscle fiber is lost.

V. E. DUDMAN.

ROENTGENOLOGY

Montgomery, D. W., and Culver, G. D.: The Pre-Operative Reduction of Epithelioma by Roentgen Rays or Radium. *J. Cutan. Dis.*, 1917, xxxv, 837.

The authors regard it as an accepted principle to precede operative treatment of cancer in certain locations as, for example, of the uterus, including its cervix, of the vagina, of the rectum, tongue and lips, by a primary radiation with radium. They believe a similar procedure may be made use of in cancer of the skin to reduce the resulting scarring and deformity or to bring an inoperable lesion within the limits of eradication.

In support of this contention a case is cited of large epithelioma of the side of the nose which was inoperable when first seen, but was completely healed by roentgen radiation followed by curetting and further radiation. They think prolonged moderate irradiation is preferable to short intensive dosage; also that healing induced by treatment with roentgen rays alone is deceptive. Recurrence may take place from cell rests located deeply which had not been reached. An example of such a case is given.

ADOLPH HARTUNG.

Levin, I., and Joseph, B.: Morphologic Appearance of Cancer Clinically Cured by Radium and Roentgen Ray. *J. Am. M. Ass.*, 1917, lxix, 1068.

The authors first discuss the terms "radical cure," "clinical cure," and "improvement." A surgical statement that a cancer case is radically cured implies that the patient is alive and free from the disease from three to five years after the operation. This is a wrong conclusion, however, for according to the figures of Heurtaux a considerable percentage of recurrences take place after the four or five years. More correctly speaking, the cases mentioned above should be put under the head of clinical cures.

A clinical cure of a cancer means a gross destruction or diminution of the size of the primary tumor, with disappearance of the symptoms and a state of well-being continued for a sufficiently long time to preclude the possibility of a spontaneous remission of the disease.

An improvement or palliation involves the alleviation of symptoms without any inhibition of the development of the growth of the malignant tumor.

It has been definitely demonstrated that the action of radium and roentgen ray therapy is to effect a palliative or a clinical cure, if not a radical cure, and the fact that a radical cure is not obtained does not detract anything from the value of the method.

As to how the radiation produces its effect, the general statement is made that tissues consisting of less differentiated, younger cells, cells in a state of active proliferation, are most deeply influenced by the rays, and that consequently there is a selective action of the rays on the actively proliferating tumor cells, as compared with the normal organ cells. First, there are morphologic changes noted in carcinomatous or sarcomatous tissue under radiation which are noted in the tumor cells themselves, these being manifested by the vacuolation of the protoplasm, pyknosis of nuclei, karyolysis and ultimately complete necrosis of the cell. These cellular changes are accompanied by a round cell infiltration which replaced the destroyed cancer cells. Subsequently this round cell infiltration is changed into dense sclerotic connective tissue poor in blood-vessels. This connective tissue formation becomes extensive, surrounds islands of cancer cells, and assists in the destruction of the latter. Some observers maintain that the action of the rays has been confined to the production of connective tissue, and that the cancer cells are affected only secondarily, the result of disturbed blood supply following the sclerosis of the new connective tissue.

The authors obtained pathologic sections from a

case of carcinoma of the sigmoid, with metastatic dissemination in the peritoneum, a case of carcinoma of the breast with axillary involvement, an inoperable case, a melanotic cancer involving the skin in the right supraclavicular region, and an adenocarcinoma of the ascending colon.

In the case of carcinoma of the sigmoid, the patient died from acute intestinal obstruction, previous to which massive doses of roentgen rays had been given. At autopsy, the peritoneum was studied with numerous white plaques. Microscopic study of a section taken through two loops of small intestine that were firmly bound together by adhesions showed that the latter consisted of a thick layer of connective tissue containing occasional groups of tumor cells. During six months, it was demonstrated that not a single one of the minute nodules found at the operation developed into a discrete secondary tumor, and the primary sigmoid tumor did not increase in size during that time.

In the case of the breast carcinoma, seventeen months following the beginning of the treatment with radium and the roentgen rays the patient died and a necropsy was performed. A minute search was made for possible metastases, but none were found. Microscopic examination of the tumor of the breast showed a scirrhous carcinoma and the lymphatic glands of the axilla were filled with solid carcinoma. While morphologically the tumor presented no change, still after a year and a half there was no evidence of dissemination or metastasis, and the authors concluded from this that there was a distinct inhibition of the growth as the result of the roentgen exposures; that is, the carcinoma was transformed into a biologically and clinically benign type of tumor, although the morphological appearance was not changed.

In the case of melanotic carcinoma, after two years and a half the patient was clinically well, and no metastatic tumors had developed. The ulcer had healed, and the growth, although diminished in size at first, finally remained stationary. The authors consider this another case where radiotherapy inhibited the proliferating power of the cancer cells and arrested the growth of the tumor, without producing any apparent morphologic change.

A clinical inhibition was also obtained in the case of adenocarcinoma of the ascending colon. In this case, the morphologic appearance was changed from an adenocarcinoma to a benign adenoma.

The conclusions are then that both clinical investigations and experimental studies bear out the view that the action of radiation of radium and roentgen rays is to impair the proliferating power and consequently the malignancy of cancer cells, without producing change in the morphologic appearance of the tumor. That is, the first action of the rays is to effect a sterilization, as it were, of the cancer cells. The sclerosis which follows is explained both by the direct action of the rays and the natural history of the cancer cell. It is imperative, therefore, that every malignant tumor should be subjected to radiation, both before the performance of a partial or radical operation, and also following the operation.

W. A. EVANS.

Hubeny, M. J.: The Roentgen Ray in the Diagnosis of Gastro-Intestinal Disease. *Interst. M. J.*, 1917, xxiv, 936.

The clinical value of the roentgen ray in the diagnosis of gastro-intestinal disease has now become widely recognized. Twenty years ago Cannon of Boston first used bismuth subnitrate in food to study the living stomach of a cat, and soon after the human stomach was examined in the same manner. The plate method together with fluoroscopic examination gives the best results. Without the plate method useful evidence may escape in fluoroscopic examination alone.

Holzknecht with his assistants Jonas and Handek compiled a system or series of symptom complexes based on their large experience, as follows:

1. Normal stomach.
   a. Stomach empty after six hours. Head of bismuth column in ascending colon.
   b. Stomach shadow normal.
   c. No increased peristalsis. No antiperistalsis.
   d. No sensitive pressure point.
   e. Hydrochloric acid normal.
2. Simple gastric ulcer.
   a. Small residue after six hours.
   b. Sensitive pressure point over the stomach.
   c. Normal stomach shadow.

Other confirmatory symptoms are: antiperistalsis displacement of the pylorus upward and to the left, snail form of the lesser curvature, stable transverse contraction, changing transverse contraction.

3. Old contracting ulcer on the lesser curvature of the pars pylorica.
   a. Small bismuth residue after six hours.
   b. Pressure point.
   c. Displacement upward and to the left.
   d. Snail form of the stomach.
4. Callous ulcer of the pars media.
   a. Small bismuth residue after six hours.
   b. Pressure point and resistance in the pars media.
   c. Transverse contraction of the pars media.
   d. Diverticulum without air bubble in the smaller curvature, immovable.
5. Old stenosis of the pylorus, due to ulcer.
   a. Large sickle-shaped bismuth residue after six hours.
   b. Dilatation.
   c. Loss of tone.
6. Ulcer of the duodenum.
   a. Stomach empty in six hours. Head of bismuth column in the ascending colon.
   b. Stomach shadow normal.
   c. Pressure point moving with the duodenum.

Handek's niche, if present, is conclusive evidence of a gastric ulcer. In this, there is an accumula-

tion of the opaque material which has emerged through the penetrating ulcer and shows on the posterior wall or lesser curvature of the stomach in the form of a pouch. With the patient upright, the opaque material has above it a gas bubble.

The hour-glass deformity due to cicatricial contraction of an old ulcer must be differentiated from spasmodic hour-glass and deep peristaltic contraction. Painful pressure points associated with abnormal contours are highly suggestive. The spasma due to gastric ulcer, duodenal ulcer, pancreatic involvement, cholecystitis, and appendicitis must be differentiated.

Duodenal ulcer should be examined by the serial plate method. This is considered by the author to be the best method of examination for this condition. The deformities of the cap as observed roentgenologically exceed the pathological surgical findings, and the supposition is that intrinsic spasms of the caput occur similar to gastric spasma associated with gastric ulcer. The usual types of deformity show:

1. Niche-like cavities.
2. A small compact shadow with no regularity of contour. If due to obstructing ulcer, there may be hyperperistalsis, antral dilatation and six-hour residue.
3. The presence of incisura.
4. General distortions with sharp finger-like projections and incisura-like indentations.

In addition to the above direct, the following indirect findings are corroborative: (a) gastric hypertonus, hyperperistalsis and hypermotility; (b) six-hour gastric residue; (c) dilatation of antrum pylori; (d) gastro-spasm; (e) duodenal diverticulum.

The essential clinical data should be correlated with the direct or inferential signs, as no one method should be neglected in ascertaining a correct diagnosis. C. B. HOLLINGS.

MILITARY SURGERY

NOTE—Readers are referred to the Table of Contents for other articles dealing with military surgery which appear under the various headings according to our anatomical arrangement.

McKenzie, R. T.: The Treatment of Nerve, Muscle, and Joint Injuries in Soldiers by Physical Means. *Canad. M. Ass. J.*, 1917, vii, 1057.

The conditions to which physical therapy applies are as follows:

1. Injury to peripheral nerves all the way from the bruising of a nerve-trunk to its destruction and restoration by surgical means. There is weakness or paralysis, muscular wasting and contracture. The treatment is met by the application of support to prevent overstretching of weak muscles and to prevent contracture of those that are unimpaired, massage, electricity, passive and active motion, and later gymnastic and vocational training.

2. Scar tissue may contract in such a manner as to impede the circulation and by pressure on nerves may produce severe pain in addition to the cold, clammy and cyanotic extremity. The whirlpool bath for twenty minutes changes the cold purple of a hand or leg into a warm crimson and the masseur is able to massage and manipulate that which before the bath was impossible.

3. Old septic wounds are frequently persistently painful long after they have healed. Massage very frequently discovers and brings to the surface the infection, in the form of a sequestrum or other foreign body.

4. In all postoperative conditions the cure must be applied by physical means. It is not enough to break down an adhesion or to restore a joint to potential usefulness. Its function must be improved and the patient must be taught to use it.

5. Functional neuroses such as paralysis, contractures, loss of sight, speech or hearing, areas of anæsthesia or hyperæsthesia, show many remarkable cures by systematic massage, exercise and electricity in connection with suggestion and encouragement.

6. Treatment of shell shock consists of rest and sedative treatment by the continuous bath at skin temperature and the substitution of gentle massage and electricity for active movements at first, with a gradual increase of exercise.

7. "Soldiers' heart" is a symptom of overstrain. The pulse is rapid, there is dyspnœa, and the thyroid gland is enlarged. The frequency current, the sedative bath, electric massage and rest rapidly produce improvement.

8. The after-treatment of sprains, fractures, rheumatism and gout consists of massage, electricity and hydrotherapy. For painful conditions such as neuritis, neuralgia, or for any condition requiring active hyperæmia, electricity is of value. The high frequency current used in diathermy causes a sensation of warmth and has great power of deep penetration. Radiant heat is supplied by means of electric lamps in an electric light bath in a cabinet. Heat thus produced is alterative and assists elimination. The whirlpool baths are very valuable. The arm or leg is plunged into a vessel containing water at about 105 degrees which is circulated by a propeller. Air is also introduced so that the limb is surrounded by a swirling, bubbling current, the temperature of which is raised to 120 degrees. These baths are especially effective for painful stumps, painful scars, and for conditions which lower the circulation and nutrition of the member, and when followed by active motion together with

massage judiciously applied, are of great value. Various parts of the body are exercised by various forms of apparatus. Gymnastics in the form of games or sports, together with occasional therapy or functional training must be judiciously applied.

J. J. KURLANDER.

Uffoltz: Abortive Treatment of Infected Wounds (Le traitement abortif de l'infection des plaies). *Arch. de méd. et pharm. mil.*, Par., 1916, lxv, 1.

The author reports 130 non-selected cases of infected wounds treated by the Carrel method. There were 78 recoveries. These include 52 without fracture with an average treatment lasting 24 days and giving preservation of functional integrity in 47 cases. Nineteen were fracture wounds with an average of 57.5 days of treatment and preservation of functional integrity in 11 cases. Seven articular lesions had 44.5 days of treatment with functional preservation in 3 cases.

Forty-nine cases are still in course of treatment or were evacuated to other hospitals. There were 3 deaths.

Short histories of the 130 cases are given with temperature curves in the case of the more important lesions. The cases comprise all types of wounds.

W. A. BRENNAN.

Shirey, G. O.: Present Methods in Military Surgery. *J. Arkansas M. Soc.*, 1917, xiv, 140.

Shirey reports a lecture delivered by Bernard of the French army.

Due to changes in the methods of warfare, the treatment of wounds is radically different than heretofore. In the Russo-Japanese War and the Balkan Wars the wounds were caused by smooth bullets, and no operative interference was attempted; the wounds were simply dressed and the patients sent to base hospitals. With the advent of the widely used shells, projectiles and grenades, the wounds are ragged and there is much destruction of tissues. Early in the war when these cases were left alone, a large majority of them came to the base hospitals with gas gangrene.

The present practice is to do a "debridement." This consists in opening the wound and removing all dead and badly mangled tissues. If the shell is easily found, it is removed at once; otherwise no search is made.

It has been found that gas gangrene is most dangerous when the wound is in the calf of the leg. Next in order come the thigh, forearm, arm, and buttock.

To better understand how the French handle their wounded, a case is followed from the field. At the first aid station the injured part is washed with pure alcohol, painted with tincture of iodine and dusted with Vincent's powder, i.e., hyperchlorite of lime 10 parts and boric acid 90 parts. If indicated, a tourniquet is applied next to the skin and a tag attached to the patient stating "emergency tourniquet applied."

The case is then sent to the surgical advance station which is equipped with operating rooms and wards. Here if necessary a "debridement" is done and the patient is sent by motor to the evacuation group located about twenty kilometers behind the front lines. From here the patient goes direct to the base hospital.

The treatment then is as follows: Nearly all wounds come from the battle front septic and here either normal saline or Carrel's solution is used. Bernard reports rather favorable results from the use of Carrel's solution.

In short operations ethyl chloride as a general anæsthetic is used, while in prolonged operations ether is chosen. General anæsthesia is used almost entirely.

In preparation for the operation, the area is not scrubbed, but is cleaned with ether, then washed with Dakin's solution and painted with tincture of iodine.

Early in the war operation was not done on abdominal cases, following the favorable reports of expectant treatment from the Boer War, the Russo-Japanese and the Balkan Wars. Later the Murphy operation was done, i.e., an opening was made in the hypogastric region and a drain inserted. This proved unsuccessful if there was a perforation or hæmorrhage.

Now operation is performed if possible. In thoracic abdominal wounds a general anæsthetic is dangerous and no attempt should be made to operate after the first thirty-six hours. For general thoracic cases medical treatment holds out the best chances for recovery, namely, compressive bandages, salines, gelatinous serum, morphine and absolute rest.

In cranial cases transportation is dangerous. Here foci of infection are removed if present. In fracture of the skull, any decompressed bone is removed by making five holes in polygon shape and sawing between with a gigli saw. The dura is not opened if no signs of injury exist. No antiseptics are used on the brain as they are irritating. Frequent lumbar puncture is employed to prevent hernia cerebri.

In cases of shock, heat, saline and adrenalin, camphor in oil and strychnine are used. Morphine also is used if required.

In cases of gas gangrene, treatment includes "debridement" and continuous irrigation with Carrel's solution. Serum treatment in this condition has not proven satisfactory. I. E. BISHKOW.

Mott, F. W.: The Microscopic Examination of the Brains of Two Men Dead of Commotio Cerebri Without Visible External Injury. *Brit. M. J.*, 1917, ii, 612.

The examination of the brains of two cases of death from shell shock without visible injury and without punctate hæmorrhages indicative of gas poisoning is of interest for several reasons. This is the first description that has been given which serves

to explain (1) sudden death in shell shock, and (2) the clinical symptoms which persist for some time after the commotion of the brain in non-fatal cases.

A man developed a degree of nervousness on the Somme which he never lost, but was able to control for six months. Later he was in an area which was subjected to an intense bombardment, during which, as far as can be ascertained, no gas shells were used. This lasted about four hours. Although he remarked to another man that he "could not stand it much longer," he did not give way until the following day, twelve hours later, when perhaps six shells came over.

He was not buried nor "gassed." One shell burst just behind his dugout, ten feet away, in the morning, but many must have been as near the previous day. Early symptoms were tremors and general depression. The later symptoms were coarse tremors of the limbs, crying, inability to walk or to do anything. He would not answer questions, very like the hysterical manifestations of melancholia. The pupils were dilated. The man was admitted to the field ambulance in the evening in a state of acute mania, shouting, "Keep them back, keep them back." He was quite uncontrollable and impossible to examine. He was quieted with morphine and chloroform and slept well at night. The next morning he woke up apparently well, and suddenly died.

The summary of the histologic changes is as follows: There was a generalized early chromatolytic change in the cells of the central nervous system. This change varied in intensity. The cells most affected were the small cells in which the basophile substance had partly or nearly disappeared. In the larger cells the Nissl granules were smaller and not packed so closely together as normally. The small cells of the medulla and pons were slightly swollen and the nucleus large and clear. This change was present in some of the large cells, but less evident. This change indicated a relative degree of exhaustion of the kinetoplasm, assuming that the amount of the basophile substance is an index of biochemical neuropotential. The Nissl granules are not present in the neurone during life, but they disappear altogether in a cell that, prior to death of the whole body, has been so injured as to decay and die. Granted this premise, then, it may be assumed that the cells in this case were in a state of commencing nervous exhaustion; some nuclei of cells showed the changes more markedly than others, for example, the cells of the vago-accessorius nucleus.

The vessels of the pia arachnoid membranes of the brain were congested and there were scattered subpial hæmorrhages of microscopic size almost everywhere.

In the white matter of the corpus callosum, the internal capsule, the pons and medulla, there were seen congested veins and hæmorrhage into the sheaths of these vessels, with occasionally extravasation of blood corpuscles into the adjacent tissues.

EDWARD L. CORNELL.

GYNECOLOGY

UTERUS

Risley, E. H., and Leland, G. A., Jr.: A Report of the Treatment of Carcinoma of the Cervix at the Huntington Hospital for a Period of Four Years. *Boston M. & S. J.*, 1917, clxxvii, 891.

Risley reports a series of 113 cases of carcinoma of the uterus treated with radium at the Huntington Hospital from January, 1912, to June, 1916.

The cases are classified in five groups:

Group 1. Cases of border-line operability in which pre-operative radium treatment aims at a reduction in the size and fixation of the mass, rendering the chance of total extirpation more promising. Five such cases were made operable by radium applications, making the mass more movable. Three patients are alive at present, one 18 months after operation and without symptoms; one 12 months after operation without recurrence; one 20 months after operation but with local recurrence. Two are dead; one died 3 weeks after operation from a cause not stated, and one was free from disease for 2 years after operation, then recurrence and death took place after 4 months of radium treatment.

Group 2. Cases accepted for prophylactic radiation following radical hysterectomy. Only five such cases are recorded; three are alive without recurrence 15 months after operation; one had recurrence 12 months afterward; one was free from disease 8 months, after which time the case could not be traced for observation; one case died of recurrence 14 months following the operation.

Group 3. Postoperative or recurrent cases: 37 recurrent after hysterectomy. Three have not been traced; 8 are alive and free from disease; 2 are in questionable condition; 5 have had definite recurrence; 20 are dead. The average duration of life after operation and the beginning of radium treatment was 8 months.

Group 4. Those cases of recurrence or continuation following curettage or cauterization. In almost every case there has been steady progress of the disease since the palliative operation. Of the 22 cases, two were not traced; one is alive and without recurrence 19 months after beginning radium treatment; three were lost sight of; four are alive after an average of 10 months since the institution of the radiotherapy; fifteen are dead. The best results are obtained in cases thoroughly cauterized, with all the carcinomatous area removed and a real crater of the cervix formed into which the radium can be introduced immediately.

Group 5. Inoperable cases where radium can only be used as a palliative measure. Of the 22 cases, one has not been traced; three are alive 22 months after starting radiotherapy; there is an apparent retardation of the growth and general improvement in their condition; 18 are dead, showing an average duration of life of 9½ months. In these cases three things can be accomplished with radium: a checking of the hæmorrhage, control of the foul discharge, and often relief of pain.

The author advises prophylactic radiation following hysterectomy. The treatment of early recurrence offers a fair prognosis. Late treatment offers only alleviation of symptoms. Inoperable cases are made more comfortable with probable prolongation of life. Radium should be given earlier and for a more extended period in these cases. All operated cases should report for observation once a month for the first year, once in three months for the second year, and at frequent intervals during the succeeding years, so that early radiotherapy can be administered in cases of recurrence.

L. R. GOLDSMITH.

MacFarlane, W. D.: Uterine Fibroids; Notes on Their Diagnosis, Complications, and Treatment Based on the Observation of 150 Cases. *Glasgow M. J.*, 1917, vi, 257.

In the author's series of cases, 110 supravaginal amputations of the uterus were performed with excellent results. The mortality was 3 per cent. In uncomplicated fibroids the mortality should be nil; it, however, varies from 1 to 2 per cent. When there is any suppurative or degenerative change the mortality increases. All the deaths in this series occurred in fibroids with pyosalpinx or some form of infection. Panhysterectomy was performed in five cases on account of malignant new-growth invading the tumor; all the cases made a good recovery. Myomectomy or enucleation was undertaken in fifteen cases with good results, pregnancy following at various periods in several and no difficulty being met with during labor. It is a general rule not to perform enucleation on tumors which markedly involve the endometrium.

The following principles should be followed in deciding between myomectomy and supravaginal amputation or total hysterectomy:

1. Where there is malignant new-growth a panhysterectomy according to the radical method should be performed.

2. Multiple fibroids are, as a rule, most effectively dealt with by supravaginal amputation of the uterus.

3. Pedunculated tumors should be treated by myomectomy.

4. Infected submucous fibroids are most safely removed by vaginal myomectomy.

It may be stated, as a result of surveying these 150 cases with care, that:

1. Fibroid tumors of the uterus are rare under thirty years of age and frequent over that age. The earliest recorded case is that of a girl thirteen years of age, reported by Cavaillon.

2. All fibroid tumors need to be carefully watched, as they may become a source of danger to the patient.

3. The menopause does not necessarily bring about a cure; as the patient grows older, these growths constitute an increasing danger.

4. The risk of malignant new-growth arising in a fibroid before forty years of age is not great; after that time the danger increases with each year.

5. When these tumors produce symptoms sufficient to cause the patient to consult her medical attendant, surgical treatment is indicated, or deep-seated therapy by X-rays. Palliative treatment has a distinct place, but is very generally unsatisfactory. Many of the cases operated upon had previously been subjected to long periods of medical treatment and invalidism, and were finally forced to have relief by surgical procedure.

6. In properly selected cases treatment by X-rays gives good results.

7. Cases of small uncomplicated fibroids do not require treatment, but should be medically supervised regularly.

8. Uterine fibroids predispose to sterility, but do not prevent conception. If a patient is known to have had uterine fibroids prior to her pregnancy, careful examination of the pelvis should be made at least one month before labor is expected; after delivery the third stage of labor must be carefully watched for a severe postpartum hæmorrhage; the puerperium must be supervised with care, as possible infection or degeneration of the tumor may occur. Many pregnant women with uterine fibroids have a perfectly normal labor.

9. Atrophy of the fibroid occasionally occurs after the pregnancy and puerperium are completed; it is, however, of rare occurrence.

EDWARD L. CORNELL.

Chome, E.: A Case of Pyometra (Sur un cas de pyométrie). *Arch. mens. d'obst. et de gynéc.*, Par., 1917, v, 285.

Chome gives the clinical history of a case of pyometra observed in a woman of 57 years. The case from the symptoms was believed to be a degenerating fibroma, and a subtotal hysterectomy was done. On making the section, a large quantity of pus, which had filled the uterine cavity, escaped into the peritoneum. The woman recovered. The uterus showed three kinds of distinct neoformations: a first clearly cancerous; a second due to proliferation of the glandular system; the third formed of clear cells superficially developed.

The case agreed with the classical picture of pyometra. This lesion is habitually a complication of cervical cancer. In 59 cases which the author found reported, there were 39 cervical cancers, 4 corpus and 2 isthmic cancers. In 273 cervical cancers collected by Buerkle there were 17 cases of pyometra. The cancer is usually scirrhous, producing a stenosis which prevents the free flow of fluids, and these consequently accumulate in the uterine cavity. The distention is facilitated owing to the fact that the uterine muscle has lost in contractility either on account of senile sclerosis or fibromatosis.

Pyometra is almost exclusively observed in the cancers of elderly women from 55 to 70 years old. Except in cancer cases, pyometra is very exceptional. 'In young women it is occasionally found where there is a congenital malformation of the genital organs.

The presence of an obstacle at the uterine neck is not sufficient in itself to create a pyometra. Normally the secretion of the uterine mucosa is insignificant and some lesion of the mucosa must be present which causes abnormal secretion. In cases of cervical cancer, infection of the uterine cavity is easily understood.

In the reported cases of pyometra, the mucosa was only rarely examined. The lesions found were those of endometritis, especially of the type called senile. These lesions are either glandular, interstitial or of a mixed type, all being different stages of an infective process. In the author's case the histologic tissues showed hyperplasic endometritis and interstitial endometritis with atrophy and epithelial destruction.

The author thinks that pyometra is only a particular form of senile endometritis; but in young women with malformation it results from suppurative hæmatometra.

The bacteriology of the condition has been insufficiently investigated. Streptococci, staphylococci and the colon bacillus have been found.

Diagnosis is rarely made, but should be considered in cases of cancer with senile atresia of the cervix and distended uterus. W. A. BRENNAN.

Stone, I. S.: Development and Perfection of the Interposition Operation for Prolapse of the Uterus and Bladder. *Tr. South. Surg. Ass.*, St. Augustine, 1917, Dec.

The author states that the operation is a result of the split-flap method of Arx and Sanger, who made a longitudinal incision through the anterior vaginal wall and separated the bladder from it and the anterior wall of the uterus in the treatment of cystocele. Then came the various methods of Freund, Wertheim and Mackenrodt; the latter called his method vaginofixation, which was successfully used to overcome retroversion of the uterus.

The methods of Freund and Wertheim involved turning the uterus out into the vagina and fixing

the organ permanently in that position. This objectionable procedure was promptly followed by the method of bladder elevation upon the uterus and fixation of the uterus to the entire length of the upper and outer surface of the anterior vaginal wall, immediately upon the former site of the bladder. This operation was exploited by several continental surgeons, each of whom claimed priority; but it is absolutely certain that Duhrssen and Schauta in Germany and Austria respectively, and Watkins in America were influenced by those operators who introduced vaginal fixation of the uterus, although they have or should have the credit of developing, perfecting, and firmly establishing an operation which has proved the most reliable of all vaginal methods of treating prolapse of the uterus and bladder.

EXTERNAL GENITALIA

Bertino, A.: Obstetrical Vesicovaginal Fistula and Ureterovaginal Fistula; Radical Treatment by Ureterocystostomy (Fistola vesico-vaginale e fistola uretero-vaginale ostetriche-cura radicale; uretero-cistoneostomia). *Ann. di ostet. e ginec.*, Milano, 1917, xli, 41.

The patient in Bertino's case was a primipara twenty-two years of age. The fistulæ were due to forceps manipulations, the patient having a contracted pelvis. The co-existence of two fistulæ of this kind is rare and not usually recognized; the vesicovaginal fistula being more easily accessible, the second fistula is not observed and is only found when later trouble arises. In this case the diagnosis of the double fistula was not made, and as the fistulous flow of urine continued after treatment of the vesicovaginal fistula, the author was obliged to proceed to a second intervention.

Of the various operative measures for the treatment of ureterovaginal fistula, the author decided on a mixed route of approach, namely, intra-extraperitoneal, hoping to be able to avoid the danger of polluting the peritoneum by terminating the operation extraperitoneally. This happened. The technique was very similar to that of Stoeckel, differing only in the fact that in the case reported by the author the ureter was found quite extraperitoneally.

The method was also somewhat similar to that of Legueu who followed the course of the ureter through the peritoneum, closed the peritoneal cavity and looked for its termination subperitoneally, proceeding from above downward, rather than from below upward, as in the author's case. Anastomosis of the ureter to the bladder in this case was by direct suture.

There was some trouble due to suppuration in the postoperative period. The patient, however, recovered and the final result was satisfactory as regards the functioning of the anastomosed ureter and the urinary capacity of the patient.

W. A. Brennan.

Leonard, V. N.: Fibroid Tumors of the Vulva. *Bull. Johns Hopkins Hosp.*, 1917, xxviii, 373.

Fibroid tumors of the vulva, although rather uncommon, are by far the most frequent of the benign, solid neoplasms found in this region, and an idea of their frequency may be gathered from the fact that but 6 cases appeared among 23,000 gynecological admissions to the Johns Hopkins Hospital.

The tumor usually appeared first as a small, firm, painless nodule immediately beneath the skin of the labium majus. Its growth in some cases was extraordinarily rapid, and the tumor usually soon became pedunculated. Growth continued and actual interference with locomotion was likely to be the first inconvenience experienced by the patient.

When seen by the surgeon, these tumors have in most cases developed a well-marked pedicle, and, hanging between the thighs, present a remarkable picture. The upper surface of the tumor and the skin of the pedicle may be covered by hair. The skin covering the tumor is generally thick and thrown into numerous shallow folds and wrinkles, at once suggesting the skin of the scrotum. The skin is freely movable over the tumor and its surface is usually quite unbroken. On palpation a firm, smooth or slightly lobulated mass is made out which is quite insensitive to moderate pressure. One or more pulsating vessels may be felt in the pedicle. On pulling the tumor and thereby making tension on the pedicle, a tough fibrous cord may sometimes be made out traversing the pedicle and entering the inguinal canal.

As the tumor grows, the circulation may be impaired and the growth become œdematous and semifluctuant to palpation. The wrinkles and folds in the skin then disappear, the surface of the tumor becomes smooth and shiny, and ulcerations commonly appear at the most dependent portion. In many cases the tumor undergoes just these changes during menstruation. The tumor may swell to twice its size during the menstrual period, become soft and quite sensitive, and rapidly assume its former size, firm consistency, and relative insensitiveness soon after the cessation of menstruation. Should pregnancy occur, the tumor usually shows the same changes, but in addition may take on a very rapid growth.

The author gives a brief clinical history of each of the cases, describes the operation which was performed and gives a summary of the gross and microscopic examination of the specimens removed. From a study of these cases and a review of the literature he makes the following summary:

Fibroid tumors of the vulva are the commonest of the benign solid tumors of this region and grow to larger size than superficial fibroid tumors in any other part of the body. As a rule, they grow rapidly and soon become pedunculated, and most of them show some form of degenerative change.

The subperitoneal fibromata, which take origin in the pelvic connective tissue and, growing along lines of least resistance, first appear at the vulva,

are the largest tumors on record. The largest tumor ever described was one of this type which weighed 268 pounds.

Excluding the subperitoneal group, the author believes it may be said roughly that two-thirds of the fibroids of the vulva originate in the subcutaneous connective tissue and one-third in the extraperitoneal portion of the round ligament, while nearly one-fifth of them become sarcomatous.

The vascular changes accompanying menstruation and pregnancy are shared by these tumors and exert a marked influence upon them, as is clearly shown by their swelling and sensitiveness under these circumstances. Herein, he believes, lies the explanation of the fact that, almost without exception, they occur in the child-bearing period, that they grow rapidly, that they usually show degenerative changes, and, finally, that a remarkably large percentage of them become sarcomatous.

GEORGE E. BEILBY.

Mauclaire: Intense Vulvovaginal Pruritis Treated by Resection of the Perineal Nerves (Prurit vulvo-vaginal intensif traité par le résection des nerfs périneaux). *Ann. de gynéc. et d'obst.*, Par., 1917, lxxii, 655.

Mauclaire says that when medical treatment fails and pruritis continues to be intense, nerve resection gives good results. He reports a case in a woman of thirty-four years. On the right he exposed the internal pudic nerve at its emergence from the pelvis. A second incision along the ascending branch of the ischium exposed the superior perineal or clitoridean branch nerve. This he resected for about 3 cm. from its origin behind the transverse perineal muscle. Similarly on the left side he exposed and resected about 3 cm. of the inferior perineal branch nerve. Recovery of the patient was normal. The intense pruritis has disappeared but there is still some hyperæsthesia, which the author considers due to the fact that all the sensory vulvar nerves have not been sectioned.

The author reviews the various methods of treating pruritis, and gives an anatomical description of the various nerves supplying the region. Of all treatments for intense pruritis he thinks that resection of the superficial perineal nerves and the genital branches of the abdominogenital branch nerves the best; or at least the first step in surgical treatment. In his own case he resected only the genital nerve branches, deeply on one side and superficially on the other; this resulted in recovery. He did not wish to completely anæsthetize the vulva by sectioning the abdominogenital branches through fear of occasioning cutaneous trophic disturbance.

W. A. BRENNAN.

MISCELLANEOUS

Watkins, T. J.: Cystocele, Uterine Prolapse, Retroflexion and Rectocele Repaired by Plastic Operation upon the Broad Ligaments and Vagina; Fixation of the Round Ligaments and Advancement of the Anterior Vaginal Wall; Perineorrhaphy. *Surg. Clin. Chicago*, 1917, i, 1021.

The condition is typical as a result of injury at labor especially in the case of instrumental delivery. An inverted T-shaped incision is made, the vagina is separated from the bladder by blunt dissection with the Mayo scissors, and the dissection is carried on to the base of the urethra. The vaginal flap is incised in the median line to the urethra and the hypertrophied mucosa over the body of the urethra is excised.

The bladder is then separated from the cervix and uterus by blunt dissection with the Mayo scissors up to the vesico-uterine fold of peritoneum. The base of the broad ligament is clamped on either side with long forceps and the portion of the broad ligament between the forceps and the cervix is incised. These ends are later to be sewn in front of the cervix. The peritoneum is incised and the uterus is delivered by successively applied forceps. The round ligament on either side is grasped about one and a half inches from its attachment to the uterus and is held with Allis' forceps.

The body of the uterus is next replaced in the abdominal cavity, and at a certain distance from the uterus each round ligament is fixed to the submucous connective tissue as low down in the vaginal incision as possible, so that when the sutures are tied the urethra will be drawn upward in relative fixation.

After the redundant areas of the vaginal flaps are cut away, sutures are passed through the margin of the flap near the base of the urethra, through the body of the uterus above the vesico-uterine peritoneal area and then through the corresponding edge of the vaginal flap on the other side. The second suture is passed parallel to this and about one-fourth of an inch distant.

The rest of the vaginal wound is closed with several No. 1 catgut sutures which are also passed through the anterior wall of the cervix. The anterior lip of the cervix is excised by a V-shaped incision. The cut ends of the broad ligaments are united in front of the cervix. The operation is completed by a perineorrhaphy.

S. W. BANDLER.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Hess, J. H.: The Diagnosis of the Age of the Fœtus by the Use of Roentgenograms. *Am. J. Dis. Child.*, 1917, xiv, 397.

A commendable, painstaking study of a subject is given which is often of practical importance in prognosis as to the possibility of saving the life of the prematurely born infant; as to questions of treatment and feeding; in medicolegal questions; and of paramount importance when only parts of the fœtus are available. A review is given of the literature as to the time of conception, and as to length, other measurements and weight, as related to the age of the fœtus.

This study is based upon the roentgenographic study of 55 normal cases, with ages determined from the history of menstruation and pregnancy and from measurements.

By roentgenogram the first centers are visible in the clavicles and mandible in the seventh week, and from that time the appearance of new centers is rapid. Four tables are given showing in detail the appearance of the centers.

Hess has compared the process of ossification, as observed in the roentgenograms of the fœtuses studied, with the roentgenographic studies of Alexander, Bade, Hasselwander and Lambertz, and found that the time of appearance of the centers of ossification agrees in general, there being minor differences only.

Mall, who used transparent specimens of embryos and fœtuses, was able to demonstrate the minute centers of ossification generally about one week earlier than they are demonstrable by roentgenograms. This observation also agrees with textbooks of anatomy, which place the time of appearance of various centers about one week ahead of the time at which the centers cast shadows in roentgenograms large enough to be visible.

There are some variations in the normal process of ossification, and it is also influenced by pathologic conditions of the mother and of the fœtus; for example, syphilis, rickets, osteogenesis imperfecta, etc. In general, these pathologic processes may be diagnosed in the roentgenograms.

In spite of variations, the process of ossification seems to be more constant for a particular age than the length of the fœtus. Mall, in his article on ossification in embryos up to one hundred days old, concludes that "the remarkable regularity of the appearance of the bones makes of them the best index of the size and of the age of the embryo which we now possess."

In the first half of pregnancy the estimation of the age of the fœtus may be made with greater accuracy because many more new centers appear in the first month, and also because the time of appearance of the earlier centers is more constant. In later months centers of the lower part of the skelton mostly are available for study, and these are less constant in the time of their appearance.

In studying the roentgenograms it is well to use a reading glass of about four inches in diameter, since some centers of ossification may be so small as to be very easily overlooked when sought for with the naked eye.

If only one exposure of the fœtus is made, then the best position to show as many ossification centers as possible is as follows: The back lying flat on the plate, the head turned completely to one side so that the side of the head lies on the plate and lateral exposure is obtained. It should be remembered in the study of the skull that both halves of the skull are usually visible. Arms and fingers should be extended and the fingers spread as far as possible from one another. One hand should be pronated and the other supinated. The legs should also be extended and the feet put into such a position that all metatarsals and phalanges are shown.

DAVID R. BOWEN.

Jung, F.: The Treatment of Eclampsia. *Deutsche med. Wchnschr.*, 1917, xliii, No. 8.

Jung thinks that the majority of cases of eclampsia call for hospital rather than for home treatment. The transportation of such patients calls for special precautions. In order to reduce the irritability of the central nervous system, an injection of 2 centigrams of morphine should be made before removal. Precautions to protect the patient from injury in the event of a possible convulsive attack must be observed; a large piece of rubber should be placed between the teeth and the patient during transportation should be in charge of a competent nurse.

The procedure followed in the author's clinic in Gottingen in the case of eclamptic patients is described.

If the patient is at term and the labor so far advanced that no major intervention is necessary, it is terminated by the forceps, or by version, under ether narcosis. If the labor is not sufficiently advanced a conservative attitude is adopted.

If more than two hours have elapsed since the first morphine injection, another injection of 1 cg. of morphine is given and 2 hours later 2 grams of chloral hydrate are administered as an enema. If no previous narcotic has been administered, Stroganoff's prescription is followed.

At the beginning of the treatment, withdrawal of

about 400 to 500 ccm. of blood is made from the elbow veins and followed by an injection of 500 ccm. of normal saline solution. Jung thinks that both procedures are indicated in every case if the pulse is small and frequent and the blood-pressure is not increased. But if the blood-pressure is very low and the pulse high, he omits the blood-letting and confines himself to a salt or Ringer solution injection. Such treatment will cause a disappearance of the eclampsia and permit the pregnancy to proceed.

There may be a recurrence, however, and if so, the author thinks that operative termination of the pregnancy is indicated. Jung has objections to most methods of intervention and advises only two: abdominal cæsarean section, transperitoneal or extraperitoneal; and colpohysterectomy. He prefers the abdominal section especially when there is a contracted pelvis.

The author thinks there is special need for observation of the heart action in eclamptic patients. Even after cessation of the convulsive symptoms a diminution of cardiac activity shows a progressive intoxication. Likewise the kidneys should be observed, as eclampsia is rarely unaccompanied by albuminuria. The best treatment for the renal symptoms during the convulsive period is to preserve the power of the heart. Digitalin or diuretin can be administered subcutaneously. With the passing of the acute stage, the nephritis usually clears up.

The author deals in detail with the complications which may arise from eclampsia. W. A. BRENNAN.

Hamilton, J. A. G.: The Symptoms, Prophylaxis and Treatment of Toxæmia of Pregnancy. *Med. J. Austral.*, 1917, ii, 431.

After urging the necessity of prenatal clinics and proper maternity hospitals, Hamilton divides the toxæmia of pregnancy into: (1) pre-eclamptic toxæmia; (2) eclampsia; (3) toxæmic vomiting of pregnancy; (4) acute yellow atrophy of the liver.

The pre-eclamptic toxæmia is manifested by disturbances in the urinary, circulatory, nervous and digestive systems. Frequent albuminuria during pregnancy is of significance, and unless otherwise accounted for should be regarded as toxæmic. In doubtful cases it may be necessary to examine a catheterized specimen. The quantity is usually markedly reduced. It occurs during the latter part of pregnancy, in contradistinction to nephritis, which if present, usually manifests itself in the earlier months.

Œdema, especially if it extends to the upper extremities and eyelids, and if marked in the labia as well as generally, is evidence of profound toxæmia. Blood-pressure of 160 or over and high tension pulse are suggestive symptoms. Headache when continuous and severe is a bad omen. Nervousness, irritability, insomnia, twitching and ocular disturbances are of significance, particularly the eye symptoms. Nausea and vomiting in the latter months of pregnancy as well as any gastric or abdominal pain not connected with uterine contractions are to be regarded with suspicion.

Severe epigastric pain, like the gastric crisis of locomotor ataxia, may occur as a prodromal symptom. In order to prevent eclampsia, treatment should be instituted at the earliest manifestation of symptoms. Patients with albuminuria should be strictly confined to bed, put on a milk diet, given large quantities of water and 2 grammes of pulverized jalapa or 4 grammes of magnesium sulphate every hour until free purgation is produced. Colonic irrigations with hot saline solutions, and diuretics in the form of digitalis or diuretin may be given. Elimination by the skin should be encouraged by daily hot baths and, if symptoms threaten, a hot pack is of value.

During eclampsia the patient should be put in a quiet, darkened room, as any sudden noise or light may bring on a convulsion. While necessary preparations for delivery are being made, morphine should be given and oxygen administered, especially during convulsions. A nurse should guard the patient, and either a piece of wood or a folded towel, never a cork, should be inserted between the teeth. After the morphine has taken effect, hot packs should be given, and elimination by the bowels and kidneys encouraged, the stomach washed out and 30 ccm. of castor oil or 30 grammes of magnesium sulphate, dissolved in water, poured in and left in the stomach.

Early operative delivery gives the best results. As to the use of drugs, morphine in 0.015 gramme doses repeated sufficiently often to keep the patient in a quiet sleep gives satisfactory results. The author saw two fatalities from larger doses, 0.03 gm.

Chloral hydrate can be given in 2 or 2.6 gm. doses per rectum, repeated when necessary, as this drug is well tolerated. Veratrone is useful in cases of high tension. The full dose is 1 ccm., but 0.5 ccm. is safer. It should only be used in plethoric cases, and very cautiously if operative procedure is to be resorted to. Venesection was used before veratrone came into use.

Thyroid extract has been used by some with good results; the author finds it useful as a diuretic in the pre-eclamptic state in a few cases. Pilocarpine is a dangerous drug.

Chloroform produces lesions of the liver and kidney, and should be avoided. For anæsthesia ether or ether-oxygen should be used. Renal decapsulation is risky on account of the general poor condition of the patient, who is unable to stand the lengthy operation. Lumbar puncture has been reported to relieve the convulsions, but not to combat the toxæmia. Oxygen has been advocated by Shears as a good supplement to the usual treatment.

The author describes various methods of treating eclampsia, detailing the one followed at the Rotunda, and comes to the conclusion that the radical treatment must often be resorted to; it gives the lowest mortality. He prefers the rapid method, under

anæsthesia, i.e., the vaginal or abdominal cæsarean section. In multiparæ the vaginal operation is that of choice, while in primiparæ with a narrow vagina the abdominal is best. The danger of sepsis and mortality is greatest when preliminary vaginal examinations have been made. In such cases it is best to do the vaginal operation. Desperate cases can be saved by this rapid method. The detailed technique of the vaginal cæsarean as elaborated by the author is given, as performed in 12 cases, with only one followed by a vesicovaginal fistula; this was an emergency case with no proper instruments at hand.

Toxæmic, or as it has been unscientifically called, "pernicious" vomiting, is a manifestation of the same toxæmia and the best remedy for its relief is adrenalin in three or four drop doses of 1:1,000 solution.

Hirst reports favorable results in 32 out of 36 cases treated by intramuscular injections of corpus luteum. Desiccated placenta in 0.3 gm. doses has also been tried. But if toxæmic vomiting is persistent, accompanied by progressive emaciation and small rapid pulse, emptying of the uterus should be resorted to. The rupture of the membranes generally stops the vomiting at once. An illustrative case is reported.

Pregnancy predisposes to acute yellow atrophy of the liver. More than half of the cases reported have been in pregnant women. The most distinctive symptoms are jaundice, with bile and albumin in the urine, vomiting, and coma of a varied degree. The prognosis is bad, and the only remedy is rapid emptying of the uterus. In the author's experience eclampsia did not recur in subsequent pregnancies.

L. R. GOLDSMITH.

Jefferson, J. C.: The Technique of Cæsarean Section. *Practitioner*, Lond., 1917, xcix, 562.

The operation area in non-infected cases is covered with two complete layers of sterile batiste, towels and abdominal sheets. Immediately after the abdominal incision is completed and the peritoneum opened, thick Turkish toweling is clamped to its edges. One ccm. of pituitary extract is then given hypodermically. The uterus is incised as it lies in the abdominal cavity and its contents rapidly extracted. The organ is then lifted out of the wound and grasped firmly around its base by an assistant while the interior is carefully wiped out with dry gauze in order to remove any shreds of placenta or membranes which may have been left.

Next comes an essential step in the operation, namely, stretching the cervical canal in order to provide a free outflow for the lochia. This is done by thrusting two fingers of the left hand down the canal until their tips have passed through the external os into the vagina. They are now separated so as to stretch the os and rapidly withdrawn. Great care is taken in withdrawing them that they come in contact as little as possible with the internal surface of the uterus, and not at all with the edges of its wound or with the towels. The gloves are then immediately taken off, the hands re-sterilized and fresh gloves put on.

The uterine incision is closed with interrupted catgut sutures and the organ dropped back into the abdominal cavity. Next, the upper layer of towels and batiste is removed, leaving exposed the clean, unsoiled, lower layer. The peritoneal cavity is swabbed out, the omentum drawn down in front of the uterus and the abdominal incision closed.

The main difference in the procedure employed in the possibly infected cases is that the uterus is at the outset lifted out of the abdominal cavity, and its interior swabbed out with iodine after emptying; the gloves are changed twice, once just prior to closing the uterine incision, and again after removing the soiled upper layer of towels before dealing with the omentum and the abdominal wound.

EDWARD L. CORNELL.

Crosland, G. W. K.: A Case of Cæsarean Section Complicated by Rupture of the Uterus. *Brit. M. J.*, 1917, ii, 790.

Cæsarean section was performed on the patient, aged 26, in April, 1913, when she was delivered of a dead child.

She again became pregnant and labor commenced; the pains were not severe. After admission to the infirmary she had only three strong pains. The abdomen was rather tender, but no uterine contractions could be felt; the temperature was normal, pulse 90, and there were no signs of collapse. On vaginal examination the head was presenting, but had not entered the pelvis; the os was patulous but not much dilated.

A laparotomy was done, the uterus being normal in appearance except that across the lower third there was a large subperitoneal hæmatoma extending into both broad ligaments. On opening the uterus toward the fundus, as soon as the knife reached the edge of the hæmatoma it encountered a large circular rent in the middle line of the organ, about three inches in diameter, obviously a subperitoneal rupture of the uterus through the lower part of the scar left by the former operation. The living child and placenta were easily delivered.

The incision in the uterus was sutured as best it could be, the rupture not being closed very effectively owing to the infiltrated and lacerated edges. A large rubber tube was passed through the cervix and left until morning to obviate any distention of the uterus with blood. The patient made an uneventful convalescence.

V. C. HUNT.

Darnall, W. E.: The Treatment of Septic Abortion. *Interst. M. J.*, 1917, xxiv, 1066.

This paper is based upon 466 cases in the author's service at the Atlantic City Hospital; there were 8 deaths. Darnall believes that in the presence of an abortion the safest course of action is to curette at once, unless one can be sure that the uterus is empty.

The usual routine in the author's clinic, if pregnancy is more than three months and the infection not of a virulent type, is to do vaginal cæsarean section, using the gloved finger to remove the uterine contents. If three months or under, the cervix is rapidly dilated and the contents of the uterus are gently removed with small placenta forceps. This may be supplemented by gentle curettage with a broad base curette, which does not cut, but does scrape off the tissue from the uterine cavity. There is no danger in using the sharp curette when most of the mass of tissue has been removed, if it is used with skill and gentleness.

If the cervix is fully dilated, soft gauze wound about a pair of dressing forceps or the finger furnishes an admirable method of freeing the cavity of the uterus of its contents without doing harm, thus making unnecessary the use of hard steel instruments, and creating less trauma. The uterus is then thoroughly swabbed out with equal parts of carbolic acid and tincture of iodine, the excess being taken up with alcohol. A small strip of iodoform gauze is then passed to the fundus and left in for drainage for twenty-four hours. Tight packing is only resorted to if the hæmorrhage is excessive and the uterus very flabby: it provides something to contract upon.

Some severe streptococcic cases when seen very early can be saved by a vigorous injection of antistreptococcic serum. P. G. SKILLERN, JR.

Logan, J. C.: A Case of Superfœtation. *J. M. Ass. Ga.*, 1917, vii, 158.

The patient, a girl of 16, was delivered with difficulty of a transverse presentation. The first child weighed five and three-fourths pounds. The second was about ten and one-half inches long and weighed with the placenta about seventeen ounces. The head was somewhat out of proportion to the body and the face presented a wrinkled or senile appearance. It had every evidence of being a normal five and one-half months' fœtus. There was nothing abnormal in the appearance of the placenta.

There was no mummification, maceration or putrefactive changes in the small fœtus such as might be found in twin pregnancy where one fœtus dies and is retained in the uterus until its mate reaches full term.

The uterus was not bifid or bilobular.

EDWARD L. CORNELL.

Miller, H. A.: Pyelitis Complicating Pregnancy. *Penn. M. J.*, 1917, xxi, 145.

Pyelitis occurs with sufficient frequency in pregnant women to warrant its consideration where symptoms suggestive of its presence are found. In mild cases large doses of urotropine may be given. Free drainage of the kidney is essential, and this may be obtained at times by posture, but in the majority of cases by inserting an ureteral catheter. At times when the kidney and ureter are draining freely, it may be necessary to permit the catheter to remain some days or weeks. In no instance, as demonstrated by the cases in point, has the prolonged retention of the catheter resulted in harm to the patient. In cases where the kidney substance has not been involved, this is followed by relief, and many times by a cure.

LABOR AND ITS COMPLICATIONS

Vivian, M.: Observations on Painless Childbirth; with Notes on Fifty Consecutive Cases Treated by the Hyoscine and Morphine Method. *Brit. M. J.*, 1917, ii, 760.

Observations on painless childbirth were made upon 50 consecutive cases by the author with the following deductions:

1. It is not absolutely necessary, as is usually supposed, for one to remain with the patient after the first dose of morphine and hyoscine is given, for by adhering to a fixed dosage and giving an initial large dose, omnopon gr. 2:3 and scopolamine gr. 1:100, followed every two hours by scopolamine gr. 1:200, provided the pains continue strong and regular, equally good success may be obtained.

2. A trained nurse is perfectly competent, in the vast majority of cases, to oversee a case of morphine-scopolamine labor.

3. The duration of labor is prolonged only to a minor degree and should not be offered as an objection to the method.

4. A quiet, dark room, with the least possible disturbance to the patient, adds to the success of the narcosis.

5. The effect of the drugs passes off quickly and the patients do not show the usual shock of labor.

Of the 50 "twilight" cases reported by the author, 30 were absolutely successful. Fourteen were restless, but did not remember anything of their labor, neither did they show signs of exhaustion. There were 3 absolute failures, and 3 multiparæ whose labors were so rapid that only one injection was made, the labor having terminated before analgesia or amnesia was established.

Of the 50 babies, 49 are alive and well. The remaining one was premature and still-born. Nine were born "blue," but only 3 of these required resuscitation; the remaining 6 breathed without undue manipulation. H. B. MATTHEWS.

Potts, W. A.: Notes on Painless Childbirth. *Brit. M. J.*, 1917, ii, 758.

The author calls attention to the fact that the great bugbear in the administration of morphine and scopolamine for the relief of pain incident to childbirth has been an asphyxiated or stillborn child. At the present time, with a more perfect knowledge of the mode of giving these drugs, no such fear should be entertained. When such accidents do occur, provided there does not exist any obstetric abnormality that would have produced deep asphyxia or death, the blame may well

be laid to a faulty technique in the administration of these drugs. Experience, individualization, care and close supervision are required for a successful "twilight sleep."

Of the 60 consecutive cases upon which the author's conclusions are based, there were 30 private and 30 hospital cases. Of the 30 private cases 7 babies showed some degree of asphyxia and 4 of these occurred in the first 7 cases. In the 30 hospital cases there were 6 babies that were more or less asphyxiated. Three of these occurred among the first 8 cases treated. In addition to a total of 13 asphyxiated babies out of 60 cases, there were 4 stillborn. Three of these occurred in the hospital series and one in private. These, the author is certain, were not the result of the morphine-scopolamine narcosis, but were due to obstetric abnormalities that would have, in all probability, caused the same results had no morphine or scopolamine been given.

There were 3 temperatures in the hospital series, and 2 of these cases had been examined before admission. In the private series there was only one morbid temperature.

There were 2 postpartum hæmorrhages, one in each series, that were severe enough to require uterine tamponade.

The remaining mothers and babies did well and were discharged in excellent condition on the fourteenth day postpartum.

The author's technique was modeled after that of Gauss of Freiburg. H. B. MATTHEWS.

Fairbairn, J. H.: Twilight Sleep in Childbirth. *Med. Press & Circ.*, 1917, civ, 470.

Fairbairn presents his conclusions from a study of 100 cases of twilight sleep:

1. There was more or less relief in 95 per cent of the cases.
2. Forty-five per cent showed complete amnesia and analgesia.
3. A general anæsthesia for the perineal stage renders the amnesia and analgesia more certain.
4. The occurrence of regular and steady pains, as elicited by the hand on the uterus, without considering the dilatation of the cervix, is the best indication for the time to begin.
5. Twilight sleep calls for greatly increased service for both the obstetrician and the nurse. The nurse should have had more obstetric training than the usual graduate. Owing to the constant vigilance on the part of the nurse, a relief nurse is usually necessary.

The disadvantages of twilight sleep are:

1. Prolongation of labor.
2. Tendency to delayed retraction during the third stage.
3. Sluggishness of the infant in starting respirations.

These disadvantages are not serious and no ill effects on the mother and child were noted during the lying-in period. H. B. MATTHEWS.

PUERPERIUM AND ITS COMPLICATIONS

Thoms, H.: Postpartum Hæmorrhage. *N. Y. M. J.*, 1917, cvi, 1069.

Thoms calls attention to the fact that the main etiological factors in postpartum hæmorrhage are (1) failure of the uterine muscle to contract; and (2) laceration of some part of the birth canal.

In the treatment of postpartum hæmorrhage prophylaxis is most important. Any bleeding that exceeds 16 ounces should be considered excessive and the possibility of a severe hæmorrhage borne in mind. Bleeding as the result of lacerations of the cervis, vagina or vestibule should be controlled by ligature.

Intra-uterine hæmorrhage may be controlled by any or all of the following procedures:

1. Kneading the fundus to maintain firmer contractions.
2. Administration of drugs, e.g., 1 ccm. of pituitrin, followed by 2 ccm. of ergotin intramuscularly.
3. The intra-uterine douche, e.g., a sterile douche of normal saline at 110 to 120° Fahrenheit, carefully given, high in the uterine cavity.
4. The intra-uterine gauze pack, which should be packed in such manner that no dead space within the cavity of the uterus remains.

In any case morphia should be given freely, the foot of the bed elevated, and external heat applied.

The author advises against the use of the commonly employed energetic methods during the third stage of labor and recommends the physiological waiting method. H. B. MATTHEWS.

MISCELLANEOUS

Caldwell, H., and Bibb, R. H. L.: Diabetes with Special Reference to Obstetrics. *Texas St. J. Med.*, 1917, xiii, 274.

Two cases are reported. The first, aged 31, was the mother of a boy born in 1910. During her first pregnancy she suffered much from nervousness, headache, insomnia and general anasarca. Her physician took frequent specimens of urine, but reported nothing abnormal. After delivery the patient was seized with convulsions which followed one another in rapid succession. The convulsions gradually ceased, she became conscious and made an uneventful but retarded recovery. Her father suffered from diabetes of a severe type for years.

She was seen February 4, 1917, suffering from insomnia, indigestion, eructations and nervous twitchings, and in the seventh month of her third pregnancy. Examination of the urine gave seven-tenths per cent of sugar, no albumin, no acetone, and no diacetic acid; the specific gravity of her urine was 1,020; the output of urea 12 per ccm. and a total of solids of 46.6 per 1,000 ccm. Microscopically nothing abnormal was found. She was put on a rigid diet, which was gradually increased. On April 7 she had an instrumental delivery and made an uneventful recovery.

When first seen, the systolic pressure was 140, which was reduced to 125, but in the last month rose again to 153, with a diastolic pressure of 100, notwithstanding a change in diet and a total absence of glycosuria. The pressure rose a little higher following labor, and did not begin to fall again until the action of a saline laxative.

The second case was a secundipara, aged 27. Her first child, born prematurely and precipitately, weighed 5 pounds at birth, but lived. Her urine was not examined at that pregnancy.

On January 7 her urine contained some albumin, but was free from it on the 8th. March 28 it contained 1 per cent of glucose with acetone; however, she had been eating somewhat freely of candy. On the 29th there was neither sugar nor acetone.

April 2 she was purposely given a few peppermint creams in the morning. Her afternoon's urine contained four-tenths per cent sugar, but no acid. The following morning her urine was sugar-free. She had apparently a tolerance of carbohydrates and sweets in limited amounts. She complained of dryness of her hands, and passed about three pints of urine daily. Blood-pressure was 120 to 170.

On April 22 after two expulsive pains she was delivered of a 6⅛ pound boy.

EDWARD L. CORNELL.

Young, J. Van D.: Birth Trauma. *Internat. J. Surg.*, 1917, xxx, 339.

Young states that birth trauma of various degrees is caused in two ways: by rupture or tearing of the soft parts beyond their elastic limit, by a pressure necrosis of the soft parts against the bony pelvis, or a combination of both factors. The former is not under the control of the obstetrician; the latter is partially, especially in forceps delivery. As causative agents of birth trauma may be mentioned pelvic deformities, and the age of the patient. The least favorable ages are after thirty-five or before twenty years.

Uterine rupture is favored by dystocia, abnormalities of the fœtus, hydramnion, rigid os, tumors, carcinoma and postoperative scars in the uterine wall. Cervical lacerations are increased in ratio by postinflammatory degeneration of the cervix, fibrous degeneration or a conical cervix. Tears of the vagina are due to congenitally small vaginæ and vaginal constrictions, usually found in the upper third. A fibrous hymen favors tearing at the introitus. Rapid or very prolonged labor with local pressure favors lacerations. Forceps, and especially high forceps, produce the greatest trauma, and the author's opinion is that cæsarean section is the operation of choice in cases requiring high forceps deliveries. Version increases the number of lacerations.

Emergency work should be eliminated as much as possible from obstetrical practice and the patient should be under medical observation from the earliest possible date of pregnancy. By carefully observing the condition of the patient every two weeks during gestation, the cases can be divided into four classes: normal, delayed, forceps, and cæsarean section.

Delivery in a hospital insures the best care of the patient. During delivery an operating or home table should be used. The dorsal position is preferable. Nitrous oxide anæsthesia shortens the first stage and leaves the patient less exhausted, with a consequent increase of muscular elasticity and lessened liability to injury. Pituitrin helps by decreasing the percentage of forceps deliveries. Cases liable to uterine rupture must be operated upon promptly, cæsarean being best. The use of bags and manual dilatation will often conquer a rigid cervix and allow the head to come through without injury.

Vaginal tears are unpreventable, but should be recognized and repaired. Laceration of the pelvic floor can possibly be minimized by keeping the occiput well up under the symphysis. Rupture of the vaginal wall as a rule does not injure either the bladder or rectum, but may be accompanied by perforation of either organ.

In perineal injuries an exact knowledge of the corelation of the pelvic organs, their support, musculature and the fascial planes is very important in order to restore them properly. The author makes the strongest possible plea for the same team work in obstetrics as is now common in operative work.

Inspection and repair of trauma should be done after the delivery of the placenta. All blood clots and placental tissue must be thoroughly cleared out and the uterus kept firm by manipulation and hypodermic administrations of ergot. The author describes various operations for repairs, protesting against massed sutures and emphasizing the vital importance of reconstructive surgery founded on exact knowledge of the structures injured. The article is illustrated with pictures of lacerations.

L. R. GOLDSMITH.

GENITO-URINARY SURGERY

KIDNEY AND URETER

Caldwell, E. W.: Roentgenographic Examinations of the Urinary Tract; Review of a Series of About 500 Cases. *J. Am. M. Ass.*, 1917, lxix, 1487.

In 455 cases complete records of the roentgenographic examinations were made. Calculi were reported in 119 cases, in which 22 presented two or more calculi. In 314 cases no calculi were reported, and in 22 cases there were suspicious shadows which are reported as doubtful. The total number of calculi reported was 158.

Of the 119 calculus cases, the diagnosis in 49 proved correct, either by operation or by the passing of calculi. No case was regarded as proved unless calculi had been recovered. Of the doubtful cases, calculi have been demonstrated by operation in 2 cases and by passing of a stone in 3 cases.

Of the 314 cases in which the roentgenographic examination was reported negative for calculi, stones have been subsequently passed in 5 cases. In 2 cases stones were removed by operation. Seven cases proved errors in the series of 455 reports, a percentage of about 1.5 of error. H. A. KRAUS.

Addis, T.: The Ratio Between the Urea Content of the Urine and of the Blood After the Administration of Large Quantities of Urea. *J. Urol.*, 1917, i, 263.

In a report based on experimental and clinical work, and upon a review of the literature, Addis has done much to work out the ratio between the urea content of the urine and of the blood after the administration of large quantities of urea.

The author's summary of his work follows:

1. The ratio between the urea content of the urine and of the blood expresses the number of times by which the urea excreted in the urine during a certain period of time exceeds the amount of urea present in 100 ccm. of the blood supplied to the kidney during this time. It is the relation between the amount of work accomplished by the kidney, and the most important measure of the amount of work the kidney is called on to perform.

2. Ratios measured over periods of twenty-four hours are constant in normal individuals who have the same blood urea concentration. The normal kidney is therefore not characterized by any intrinsic tendency toward variability of function. Variations in kidney function arise from differences either in the environment or in the anatomical structure of the kidney.

3. Ratios measured over short periods of time vary widely even though the blood concentration be the same. This variation must be due to short-lived alterations in environment which counterbalance one another over long but not over short time intervals, for it can be shown that such anatomical differences as may exist between the kidneys of young healthy adults do not play any appreciable part in its production.

4. Differences in the concentration of urea in the urine are not the cause of this variability in the ratio over short periods of time.

5. Evidence is given against the supposition that this variation arises from such alterations in the amounts of urea or of oxygen brought to the kidney as would be produced by differences in the rate of flow of blood through the kidney. Reduction of kidney blood supply below a certain minimum has a marked effect on the ratio, but it does not follow that alterations above that critical amount would have much, if any, effect.

6. Since it is possible to increase the ratio by the subcutaneous administration of adrenalin and to decrease it by pituitrin, the hypothesis is advanced that part of the variability of the ratio for one-hour periods at the same blood urea concentration may be due to alterations in the adrenalin-pituitrin balance in the blood.

7. It is shown that the magnitude of the ratio increases with increase in the blood urea concentration. In other words, the kidney responds to a call for more work by an increase in output which is greater than the increase in demand.

It is further shown that the relative variability of the ratio at different levels of blood urea concentration decreases, the higher that level rises. In other words, the greater the demand for work, the more constant does the rate of work of the kidney become.

Both of these phenomena may be brought into relation with the hypothesis of a regulation of kidney activity by means of the balance between adrenalin and pituitrin in the blood.

8. There is evidence that a direct relationship exists between the magnitude of the ratio and the size of the kidneys. This has been shown by comparing the average ratios obtained from species possessing kidneys which differ widely in size. The removal of one kidney leads to a depression of the ratio. In kidneys whose effective size has been reduced by necrosis or degeneration of varying extent, there is a relation between the degree of depression in the ratio and the amount of tissue which has been rendered functionless.

9. This direct relation between the magnitude of the ratio and the amount of actively functionating kidney tissue is only demonstrable under conditions in which the kidney is called on for the maximal

activity of all its secreting elements and is subject to the least degree of variation in rate of work. The ratio can be taken as an approximate indication of the size of the kidney only when it is determined during the strain induced by the administration of a large quantity of urea. J. D. BARNEY.

Bugbee, H. G.: A Clinical Study of Lithiasis Based on a Series of 198 Cases. *J. Am. M. Ass.*, 1917, lxix, 1492.

Of the 198 cases, 111 were males, and 87 females. Excluding the cases of calculi of the lower urinary tract, 12 of which occurred in females, there were 73 males and 77 females with calculi of the upper tract.

The relatively large number of patients past middle life presented vesical calculi as follows: aged twenty to twenty-nine, 32 cases; thirty to thirty-nine, 55 cases; forty to forty-nine, 43 cases; fifty to fifty-nine, 29 cases; sixty to sixty-nine, 28 cases.

In the formation of urinary calculi, two predisposing factors are: (1) a gastro-intestinal disturbance, and (2) disturbed drainage along the urinary tract.

Interference with kidney drainage is most often due to abnormal mobility. The mobility may be slight and still cause a kinking of the ureteropelvic junction if the ureter is fixed. Of the 77 females showing calculi of the upper urinary tract, in 51 the calculi were on the right side, in 22 on the left, while 4 were bilateral. In 39 of the right-sided cases, and 11 of the left-sided, a certain degree of mobility, interfering with drainage, could be demonstrated.

As all ureteral calculi are probably renal in origin, they may be grouped together in this consideration. In the males, twenty-eight were right-sided, thirty-eight left-sided, and five bilateral. Unfortunately, in but few of these cases was the renal mobility ascertained, but in several it was strikingly marked. One patient presented a pelvic kidney, and several others showed a well-marked prolapse. Abnormal mobility will no doubt be demonstrated more frequently in males if more careful examinations are made.

Three patients with renal calculi gave a history of injury. One patient presented a calculus with hypernephroma.

Pain is the most constant symptom of renal calculus, and was present in some form in 35 of 43 patients. In renal calculi the pain was never severe, except when the calculus was small and located in the pelvis or in a calix, so as to interfere with the urinary flow, thus increasing intrarenal tension.

A dull ache localized in the costovertebral angle was the most typical symptom, but was not constant, and was evidently due to local infection. Radiation along the course of the ureter was present in seven cases in which the calculus was located at the ureteropelvic junction. Other radiations noted were to the opposite kidney region, the chest, the right lower quadrant, the testes, the thigh, and the entire back. Invariably the larger the calculus, the less severe the pain, and in eight cases only vesical symptoms were present. In four of these cases the kidney had gone on to almost complete destruction. Tenderness in the costovertebral angle or anteriorly in the right upper quadrant was elicited in 32 cases, and the kidney was palpable in only 18. Roentgenograms were positive in all but two of the cases of renal calculi. In these two a diagnosis of an obstruction at the ureteropelvic junction was made, and at operation a calculus was found.

Of 150 cases of calculi of the upper urinary tract, 107 were ureteral calculi, and while they were found lodged at almost every point, from the ureteropelvic junction to the vesical orifice of the ureter, 86 were lodged in the lower twelve centimeters, and 65 of these in the last six centimeters. The symptoms in these cases extended in duration from a few hours to fifteen years.

Eighty-six of the 107 cases of ureteral calculi gave a history of pain on the affected side, 4 of referred pain on the opposite side, 65 had a definite colic, and 45 had had from two to eleven attacks; 35 gave a history of having previously passed calculi.

Of the 65 cases of calculi lodged in the last six centimeters of the ureter, 56 complained of urinary symptoms.

Cystoscopic examination revealed the calculus lodged in the mouth of the ureter in 4 cases. Œdema about the orifice was present in 47 cases. A deflection of the stream of urine from the ureteral orifice was noted in several cases in which the calculus was lodged in the intramural portion of the ureter. The urine showed pus-cells or blood-cells in 81 cases; was normal in 22 cases. Crystals were noted in 18 cases; colon bacilli showed a growth in 62 of 78 cases in which a bacteriologic examination was made.

In 75 per cent of the cases a definite obstruction, partial or complete, was evidenced by passing ureteral catheters and bougies. In 11 cases the calculus could be located by palpation through the vaginal vault and in four males by rectal palpation.

In 78 cases a roentgenogram was made with opaque catheters or bougies in position. A positive plate was obtained in 56 cases. The 22 patients now showing a shadow passed calculi following manipulation. These calculi were all small, and were either phosphatic or uric acid stones. A collection of crystals causing a definite colic was present in six cases. A complete obstruction was encountered in each case, and was relieved by intra-ureteral manipulation.

The author has made it a practice for the past five years to boil the catheters and bougies, thus rendering the bougie soft enough to pass through almost any kink, or to coil about a calculus. Often the tip of the bougie is bent so that it is hooked, and by passing the bougie, twisting it as it advances,

the calculus, which would often otherwise be passed by, is encircled by the bougie.

Calculi in the lower ureter may cause symptoms so like appendicitis that it has almost become routine to pass a ureteral catheter in all cases of right-sided pain.

In cases of large branching calculi the kidney may have to be split, as in two cases. The remaining cases can be relieved by pelviolithotomy.

Ninety-two of 107 calculi lodged in the ureter were passed subsequent to or removed by cystoscopic manipulation. Only fifteen were removed at operation.

Calculi should not be allowed to remain in the ureter too long.

A method which has proved successful, even in as large a calculus as the one exhibited, 3.5 by 1 cm., as to hook the end of the ureteral bougie and twist the bougie as it is advanced along the ureter, coiling it about the calculus and then applying traction.

Fifteen of the calculi removed at operation were approached extraperitoneally, and one transperitoneally.

There were two deaths among the forty-three patients operated upon for renal calculi, both caused by uræmia, in bilateral phosphatic calculi.

One patient with ureteral calculus died six weeks subsequent to operation. The cause of death could not be ascertained.

In 198 cases of lithiasis there were 44 cases of vesical calculi. A definite history of renal colic, with relief of pain without passing the calculus, was given in 14 cases, and in the remaining 30 it was found that the bladder was the seat of an infection and was carrying residual urine. The cause of the retention was prostatic obstruction in the males, and cystocele in the females. H. A. KRAUS.

Macht, D. I.: The Comparative Influence of Morphine and Total Opium Alkaloids on Renal Colic. *J. Urol.*, 1917, i, 201.

The difference in action on smooth muscle of morphine and the total opium alkaloids, of which narcotine and papaverine are the principal members, has been worked out by the author with the use of rings of ureters of pigs and other animals, and in the human. His technique is to suspend a ring of the ureter in a proper medium, i.e., urea-Locke solution, where it begins to undergo spontaneous contractions, to inscribe these on a kymograph, and to note upon the introduction of drugs into the solution the effect on the rate of the contractions and tonus of the ureter. Observations have been made also upon the laparotomized animal by intravenous injection and upon the human ureter from a case of nephrectomy.

Morphine increases the tonicity and frequency of contractions in the ureter, while papaverine or Sahli's combination of total opium alkaloids relax the tonus and decrease or even stop the contractions. The latter have an action analogous to that of chloroform. The therapeutic value of Sahli's mixture was proved in a case of ureteral colic when the pain was quickly relieved and no nausea was produced after morphine had failed.

H. W. PLAGGEMEYER.

Geisinger, J. F.: Obstruction of the Ureter. *Ann. Surg.*, Phila., 1917, lxvi, 654.

The author states that obstruction of the ureter as an etiological generality is mentioned in all texts, but as a clinical entity it has been ignored. To detect secondary results does not require particular diagnostic ability, but to prevent such secondary results is more important. Prevention of such results is associated with the early recognition and relief of ureter obstruction. The author emphasizes very strongly the significance of chronic ureteral obstruction as a thing of itself, to be treated with the respect its symptom-producing powers demand, to be sought in possible explanation of certain clinical pictures and to be remedied as necessary.

The author summarizes as follows:

1. Obstruction of the ureter may be separated into two classes: (a) The ureteral condition is an incidental consideration, dominant pathology being elsewhere, within or without the urinary tract; (b) the obstruction itself constitutes the essential pathology.

2. The second type is that chiefly considered in this review. Some of the etiological factors are: (a) involvement of the ureter in some distant focal infection, such as tonsillitis; (b) excessive mobility of the kidney; (c) renal infection; (d) distortions of the ureter due to pelvic operations; (e) local traumatism or infection associated with passing calculi; (f) hypertrophy of the bladder.

3. Symptomatology is primarily associated with pelvic tension, with pain of so variable a character as to be confusing. Urine is often negative.

4. Conditions often simulated are chronic appendicitis, cholecystitis, lumbago, sacro-iliac disease, postoperative adhesions, neurasthenia.

5. In the presence of indefinite symptomatology, ureteral obstruction must be included among diagnostic possibilities and must be excluded before one can feel justified in removing a chronic appendix or dismissing a patient as a neurasthenic.

6. Diagnosis is made with the cystoscope and pyelogram.

7. Treatment consists of relief of the obstruction by such means as may be required by the given case.

A. C. STOKES.

BLADDER, URETHRA, AND PENIS

Walther, H. W. E.: Tumors of the Bladder. *Ann. Surg.*, Phila., 1917, lxvi, 682.

The author states that there is probably no affection coming under the observation of the urologist in which modes of diagnosis and treatment have changed so radically in the last ten years as have taken place in dealing with tumors of the urinary bladder. The

perfecting of the cystoscope and the more extensive use of this instrument in all cases of hæmaturia has made it possible to diagnose growths more frequently and at earlier periods. Examination of the washings of the bladder and the microscopic study of these washings has also been of great help.

The main point in the successful management of tumor cases of the bladder is an early and correct diagnosis. Very often the symptoms are not fully appreciated. The three cardinal symptoms are hæmaturia, pain and frequency. The author states that often patients will be sent to him with histories of hæmaturia of long standing. Bladder tumors are divided into benign and malignant, primary or secondary, or may be designated according to the tissue as epithelial, connective or muscular tissues.

Opinion as to the treatment of tumors varies. According to the author, all cutting operations have been disappointing and at the present time he is using the method first reported by Beer in 1910. His method was the high frequency electric current in the form of a spark cauterization applied directly to the tumor. The author also states that radium has opened a new field of treatment.

The author cites 26 cases of tumors of the bladder, their history, treatment and results, with two purposes in view, namely: (1) to show successful results of high frequency cauterization and to add commendation to the procedure introduced by Beer; (2) to show the failure of scalpel surgery in advanced malignant growths of the bladder when considered from the standpoint of a permanent cure.

A. C. STOKES.

Lewis, B. and Moore, N. S.: Vesical Diverticulum; a Report of Two Cases, with Remarks on Operative Technique. *J. Am. M. Ass.*, 1917, lxix, 1334.

In the first case reported, cystoscopy showed a diverticulum located in the left posterolateral segment of the bladder, anterior to the ureteral ridge. The orifice appeared about the size of a dime. The bottom of the diverticulum was not visible. Roentgenograms of the bladder filled with thorium solution showed a definite saculation about the size of an apple, posteriorly and to the left of the bladder, attached to it by a narrow neck.

The anterior wall of the bladder, particularly toward the left, was very thin. Narrow strips of gauze were stuffed into the diverticulum until it was quite full. The diverticulum was converted into a solid tumor about the size of a pear. The peritoneum was then stripped from the bladder wall and from the tumor. Before excising the bladder it was observed that a dense, fibrous ring surrounded the neck of the bladder. This ring was strongly dilated with a uterine dilator until it presented no further obstruction.

Two cigarette drains were placed in the pocket to the left of the bladder and were brought out of a stab wound in the left inguinal region. A retention catheter, size No. 20 French, was left in the urethra.

In the second case, cystoscopy revealed a diverticulum low down in the bladder wall. About ten yards of gauze strips were packed into the diverticulum, after which it was resected. H. A. KRAUS.

Bec and Hadengue: Extraction of a Bullet Lodged in the Bladder by the Natural Route Under Control of the Radioscopic Screen (Extraction par les voies naturelles et sous le controle de l'écran radioscopique d'une balle de fusil logée, dans la vessie). *J. de méd. de Par.*, 1917, xxxvi, 212.

The case reported occurred in a soldier. Radioscopic examination showed a bullet in the bladder. The author decided to attempt its removal *per urethram* under screen control. This operation has been performed only once during the war by Legueu under different circumstances, and was successful. It was also practiced by Peck of New York.

The operation was commenced by dilatation of the canal with a No. 40 sound. Dilatation was continued until a No. 54 was passed without difficulty. A long clamping forceps was then introduced into the bladder. Under the guidance of the radioscopic screen, endeavors were made to seize the bullet. After several attempts it was finally seized by its point and extracted. The bullet was 4 cm. long and 7.5 mm. broad. It was slightly covered by a calcareous concretion, due to its long stay in the bladder. With the exception of a little hæmaturia and feverishness, there was no postoperative incident of importance and the patient was discharged cured.

W. A. BRENNAN.

Le Fur, R.: Autoplastic Reconstruction of a Large Urethral Loss of Substance and of an Extensive Wound of the Penis with Partial Destruction of the Glans (Reféction par autoplastie d'une volumineuse perte de substance urètrale et d'une plaie étendue de la verge avec destruction partielle du gland). *Paris chirurg.*, 1917, lx, 358.

Le Fur reports an extensive shell wound of the penis, corpus cavernosum, and the testicles, necessitating the removal of the latter. By means of a series of autoplastic operations he obtained a very satisfactory result. A fairly good æsthetic result has been obtained as regards the external genitals, using the scrotal skin. Not only the urethra but a large portion of the penile substance was reconstructed.

The most important point to which Le Fur calls attention is the regular and largely permeable canal which has been obtained, although the urethra was almost destroyed from the glans to the scrotal root. There is no threatened late stricture and after six months a No. 25 bougie can be passed easily.

Le Fur emphasizes the necessity of creating a urethral meatus of perineal derivation which should always be made in similar cases; it permits reunion of the autoplastic strips by first intention, which is impossible by the older methods, the indwelling sound or intermittent catheterization, and explains the good results of the autoplastics and the absence of stricture. W. A. BRENNAN.

GENITAL ORGANS

Rytina, A. G.: The Verumontanum with Special Reference to the Sinus Pocularis; Its Anatomy, Histology, and Physiology. *J. Urol.*, 1917, i, 231.

The author has made a very complete study of the anatomy of the verumontanum and its component parts, using very thin serial sections of the organs obtained at autopsies. The verumontanum is "a small, rounded, oval, elliptical or conical elevation, situated on the floor of the proximal half of the posterior urethra." It is separated from the prostate by the floor of the urethra. On the anterior surface, as a rule, are the slit-like or oval openings of the ejaculatory ducts, one on each side of that of the sinus pocularis which is generally in the midline. These structures, together with some of the prostatic ducts emptying through the verumontanum, cause the elevation from the urethral floor and make up the male uterus. Their removal would leave a smooth, flat surface, even with the rest of the posterior urethra and exactly similar to it in structure. The sinus pocularis is "an encapsulated glandular organ whose acini open by smaller or larger ducts into one grand or common duct." It is surrounded by a firm capsule from which strands of interglandular stroma run in, separate, and support the various glandular acini. That the gland is not an embryonic rest is proven by the healthy, active-looking tissue composing the glands and the avidity with which the cells take the stain. The sinus ends either in the upper part of the basis prostatæ or in the urethral wall. By special staining, smooth muscle fibers, fibrous and elastic tissue, were demonstrated in the capsule and intraglandular stroma, continuous with the musculature of the prostate and ending in the muscular wall of the urethra.

The functions of the verumontanum and sinus pocularis are not known. That the verumontanum is not an erectile organ and cannot cause a blockage of the posterior urethra with prevention of regurgitation of the semen during ejaculation has been proven. It is not composed of characteristic blood spaces and its removal does not result in regurgitation of the semen. The blood supply is no greater than that of the surrounding tissue. Walker demonstrated that the verumontanum extended not more than half-way to the anterior wall of the urethra by causing an artificial erection in a human cadaver and making a paraffin cast of the urethra. It is now generally accepted that the verumontanum simply directs the ejection from the ejaculatory ducts so that it will become intimately mixed with the thirty or forty prostatic streams issuing simultaneously from the floor, sides and roof of the urethra and converging toward the colliculus. This intimate mixture is necessary to activate the spermatozoa. The physiology of the sinus pocularis is not known, though it is supposed that its thin alkaline secretion is an adjuvant to that of the prostate in fluidifying the semen. Its excision does not interfere with the fecundity of the semen.

The author does not agree with Prosz that the ejaculatory ducts have an increased muscular investment which has a sphincteric action and that in the tonic or atonic condition of this muscle rests the explanation of many of the sexual phenomena, precocious and retarded ejaculation, spermatorrhœa, etc. Sexual disturbances do not follow radical removal of the colliculus. A case was observed in which one ejaculatory duct opened into the sinus pocularis.

H. W. PLAGGEMEYER.

Pousson: Two Cases of Foreign Bodies in the Prostate (Deux observations de corps étrangers de la prostate). *Bull. et mém. Soc. de chir. de Par.*, 1917, xliii, 1996.

Pousson says that there are only four cases of foreign bodies in the prostate reported in medical literature. One of these cases which occurred in the War of Secession was reported in 1876. In two of the four cases the projectile was successfully extracted, one by the rectal and the other by the perineal route.

Pousson relates the particulars of two cases. In the first the bullet was successfully extracted after a hypogastric section. It was situated in the median part of the prostate. In the second case a piece of shell was embedded in the tissues of the prostatic right lobe. The extraction was by the perineal route. The projectile in each case was located by radiography. Both men recovered without incident.

In the discussion Marion reported two similar cases, and Jacob another, all successfully operated upon.

W. A. BRENNAN.

Watson, E. M.: A Study of the Vesical Orifice Following Perineal Prostatectomy. *J. Urol.*, 1917, i, 543.

There are three groups of musculature situated at the vesicle orifice and in the posterior membranous urethra having control of the retention of urine. These are the internal sphincter and intrinsic musculature of the posterior urethra, both of which are involuntary in type, and the external sphincter or compressor urethræ in the region of the triangular ligament. The intrinsic muscles of the urethra in the author's opinion are much more important than has been generally thought. They are derived from the musculature of the trigone and consist of two layers: (1) an inner longitudinal, and (2) an outer circular layer, extending from the trigone beneath the internal sphincter as far as the openings of the ducts from Cowper's glands. These layers together with the internal sphincter are innervated from the prostatic and cavernous plexuses, inferior mesenteric ganglion and ganglia of the sympathetic. The external sphincter is innervated by branches of the internal pudic.

Wade, Hyman and others have made a study of the normal vesical orifice, and of changes in it, particularly after suprapubic prostatectomy. Radiographs of the normal orifice and after prostatic

hypertrophy, using a 5 per cent solution of collargol, show the internal sphincter as the point of closure. After suprapubic prostatectomy the external sphincter forms the point of bladder closure in the majority of cases, the internal sphincter having been destroyed or rendered useless. The internal sphincter remains a patent ring showing a small pouch present at the site from which the prostate was removed continuous with the bladder cavity.

In twenty-five cases of perineal prostatectomy the radiographs with a 10 per cent thorium solution in the bladder showed in no instance a permanent dilatation of the internal sphincter. One interesting cases with a very adherent median lobe and deep prostatic orifice established continence twenty months after operation, the trauma incident to the operation probably explaining the long interval. The internal sphincter, although traumatized both by the hypertrophy and operation, returns to normal in a carefully done perineal prostatectomy.

Cystoscopic changes in tabes dorsalis are analogous to those in suprapubic prostatectomy. Here to a varying degree, according to the nervous involvement, more and more of the intrinsic musculature becomes useless, until a funnel-shaped posterior urethra results and incontinence begins. In this disease the involuntary nerve fibers are destroyed, while the motor branches to the external sphincter are uninvolved. From his findings the author believes that the internal sphincter and intrinsic musculature of the posterior urethra are the controlling factors in the retention of urine and that the question of continence would seem to rest on the preservation of these involuntary muscle fibers.

H. W. PLAGGEMEYER.

MISCELLANEOUS

Young, H. H., and Frontz, W. A.: Some New Methods in the Treatment of Carcinoma of the Lower Genito-Urinary Tract with Radium. *J. Urol.*, 1917, i, 505.

Young and Frontz report several series of cases of carcinoma of the lower genito-urinary tract treated with radium radiations. By means of special apparatus it was possible to introduce a platinum capsule of radium into the rectum, urethra or bladder, map out the area to be radiated, and absolutely control the amount given. This internal use of radium with accurate methods of control and fixation has proven to be more productive of good results than the employment of large amounts externally.

External treatments of large amounts of radium to the lower abdomen, perineum or sacrum gave no relief if used alone. Close apposition of the radium to the tumor seems absolutely essential.

Cancer of the prostate and seminal vesicles responded well with relief of such symptoms as dysuria and frequency, and with reduction in size, disappearance of induration, and absorption of infiltration. In no case with complete retention or pains in the hips, thigh and back, due probably to metastasis, was there any relief. Sections taken in cases coming to operation showed extensive shrinkage and degeneration of the cancer cells. By changing the position of the radium capsule it is possible to prevent rectal irritation. Evidence of rectal irritation is manifested by frequent desire to stool, burning discomfort and discharge of mucus which may be tinged with blood.

Radiation of the malignant papilloma type of bladder tumor gave excellent results. Types of papillomata showing a histologic malignant change in the periphery showed no response to fulguration alone, but disappeared completely when fulgurated following radiation. Malignant tumors with definite infiltration of the bladder wall, as demonstrated either by cystoscopy or by palpation, showed no improvement under the use of radium.

The authors believe that in radium there is a potent agent capable of producing marked changes in malignant tumors and that in some cases there may be a complete cure, although more time must elapse before accurate final determination can be made.

H. W. PLAGGEMEYER.

Baker, T.: Genito-Urinary Causes of Low Back Pain. *Am. J. Orthop. Surg.*, 1917, xv, 819.

Pain in the lower back frequently radiating down the legs may be due to renal and ureteral lesions. Hunner observed a case of stricture of the lower part of the ureter in which the chief complaint was pain over the sacro-iliac articulation, and the patient was relieved at once by dilatation of the stricture. Young describes backache associated with inflammation of the seminal vesicles. He noticed pain in the back, sacral, lumbar and gluteal, in six cases, and pain along the sciatic nerve in three cases, as one of the earliest symptoms complained of in 111 cases of cancer of the prostate. The pain in these cases is due to the pressure on contiguous nerves. As a point of differential diagnosis it may be stated that pain on motion and limitation of motion is characteristic of lesions of the bone and ligamentous structures of the lower back, while these signs are absent or not so marked when the backache is of genito-urinary origin.

In many instances the X-ray will reveal the nature of the bony lesion while the same may be palpated. Appliances for the support of the pelvic bones will usually give quick relief from pain, whereas they will be of no service when the pain originates in the male pelvic organs. The author has met 41 cases of pain in the back of genito-urinary origin in a series of 146 cases of chronic prostatitis and spermatocystitis seen in private practice. Pain radiating along the sciatic nerve due to cancer of the prostate is usually very severe. There is great need of more co-operation between the orthopedist and the urologist in definitely locating the cause of these pains of uncertain origin.

J. J. KURLANDER.

De Sard, J.: Reparatory Surgery of the Genito-Urinary Organs (Chirurgie réparatrice des organes génito-urinaires). *Arch. de méd. et pharm. mil.*, Par., 1917, lxvii, 239.

The plastic surgery of mutilations of the genito-urinary organs differs from that of other organs inasmuch as the functional results are of much more importance than the æsthetic. It requires a long period of preparation as well as a long period for the repair. The first includes the disinfection and cicatrization of the wounds. The course of the urine must be deviated in almost every case. Hypogastric discharge is preferred by the author because it is more regular than perineal and better borne by the patient.

The author reports four extensive penile mutilating wounds treated by him.

The first case involved a transverse wound of the penis 2 cm. above the penoscrotal angle with complete section of the urethra and the right corpus cavernosum and a partial section of the left corpus. The superior stump was œdematous and gangrenous and was only attached to the inferior stump by the skin of the dorsal face. The period from May until October was occupied in disinfection, cicatrization, and the removal of small shell fragments. In October external urethrotomy was done. From December to January plastic repair operations took place.

In the second case, there was almost complete destruction of the inferior face of the glans. The superior and dorsal face of the glans was completely open, the wound dividing it into two unequal parts. The left testicle was missing. The period from July to the middle of August was given to disinfection after suprapubic cystotomy. Cicatrization resulted in a deformed gland in two segments, with a large loss of substance of the lower urethral wall. The repair operations lasted until the end of Ootober.

The third case showed almost a complete destruction of the penis. At the lower part of the gangrenous stump there was a large wound extending toward the lower part of the scrotum, only the right part of which remained. This wound spread into the thigh and buttocks. Disinfection and cicatrization with suprapubic drainage extended from July until the middle of September. September to October was occupied by repair operations.

The fourth case involved the section of the penis and the destruction of both testicles. A piece of furrowed skin was the only vestige of the penis left. Cystostomy with hypogastric deviation of the urine was necessary from November until January. The period from January to February was occupied by plastic operations.

The plastic repair operations in these four cases consisted generally in dissecting vicious scars, finding the remnants of the urethral passage, and then reconstructing the parts as far as possible. In all four cases the result of the plastic operations was to establish normal micturition, and in three cases ejaculation and erection were re-established. Illustrations of the repair procedures are given.

W. A. Brennan.

SURGERY OF THE EYE AND EAR

EYE

Donoher, W. D.: First Aid in Eye Injuries. *Northwest Med.*, 1917, xvi, 334.

The purpose of this paper is merely to present in the briefest possible manner some of the more common injuries to the eye and its appendages, the remedies to apply, and how to apply them by the first one to whom the victim may have access following his injury. To be able to successfully treat a given part of the human body in case of injury, one must of necessity have some knowledge of its anatomy, and there is no organ of the body where this is so essential as in the case of the eye.

For safety in guiding the treatment, one must know the cornea from the sclera, the iris from the ciliary body, the aqueous humor from the crystalline lens, and the relative importance of each structure to the integrity of the organ as a whole. For instance, an incised wound of the cornea may not be fatal to vision, even though the aqueous escape, nor a similar wound in the sclera destructive through loss of vitreous, but a wound apparently of slight moment at the junction of the cornea and sclera may prove rapidly destructive to both vision and eye on account of injury to the ciliary body which is situated immediately beneath this point.

Of minor injuries of almost hourly occurrence, and more abused than all other injuries combined, is the foreign body in the cornea. The first-aid man in these cases should work with artificial light and condensing lens, definitely locate his foreign body, anæsthetize the eye with a 4 per cent solution of cocaine, and when certain of complete anæsthesia, attempt its removal with a small piece of cotton twisted tightly around the end of an applicator, and placed directly on top of the foreign particle. Then by rolling the applicator between the thumb and finger, it becomes entangled in the cotton and is lifted from its bed. This is not always successful with particles in the cornea, especially if they are deeply imbedded or smooth of surface, but it never fails to catch them from the conjunctival sac. Should this fail, carefully lift the offending body out of the cornea on the point of a needle or a cataract knife, but never scrape off the corneal epithelium, which opens up a region for infection.

Following this simple injury the eye should be tied up for twelve hours, and if there is pain and redness, a drop of a 1 per cent solution of atropin sulphate should be instilled as soon as the operation is over.

Following the use of cocaine for any purpose whatever, the eye should be bandaged for at least three hours to allow the passing of the tendency to separate the epithelium from its attachment to the cornea.

Burns of the cornea and adjacent tissues from lime, hot slag, molten lead and various acids are not uncommon accidents, and while exceedingly painful, are not always as destructive as the amount of suffering would lead one to believe. At other times, however, a very harmless appearing burn will not only destroy the eye but the socket as well by the scar tissue it leaves behind. The first treatment of these injuries should consist of cleansing the eye carefully of all offending material and dressing it with a liberal quantity of plain, sterile vaseline inside and outside the lids, and covering with cotton in preference to gauze.

In case of great loss of tissue by burning from any agent, first-aid measures should be applied according to one's best intelligence until the case can be turned over to someone with more experience. For all purposes where irrigation is necessary, a saturated solution of filtered boracic acid will meet all requirements and is probably as strong an antiseptic as should be used about the eye for any but some special reason. No remedy should be used in the eye without positive indication for that particular remedy. If no drug is indicated, the eye will be better if left alone.

In cases of incised or penetrating wounds of the cornea, it is vitally important to see them early and to study carefully the position of the wound in relation to the pupil. If it be in the center, directly over the pupil, atropin is indicated to prevent incarceration of the iris in the wound, which it will do in most instances if the remedy be used early enough and in sufficient quantity to thoroughly dilate the pupil. If the injury be situated at or nearer to the corneoscleral junction, eserin solution is the obvious remedy, and, like atropin, if it is to be of any use, it must be applied soon after the injury. If the wound is large and gaping, it should be closed by careful suturing, keeping the sutures as far as possible from the center of the pupil. Small wounds in this region will take care of themselves under carefully closed lids and a gentle pressure bandage.

Scleral wounds should be sutured under careful asepsis and with scrupulous attention to the coaptation of the wound margins. As in closing a wound in any region, one must first exclude the presence of a foreign body, and in this case none but the finest sutures and the smallest needles should be employed.

In wounds of the lids it is most essential to do whatever repair work is found necessary as soon as possible after injury, for in this region almost any

kind, shape or size of wound will heal promptly if the apposition be good and the case seen early enough. This work is of vast importance to the victim; for, should the eye itself be lost, it is the more necessary that the lids should not be deformed.

The man in general practice is frequently called upon to render first aid in some of the more common varieties of very acute troubles of microbic origin, and while he accepts them as emergencies only, he should constantly bear in mind that all severe, acute, conjunctival infections, in the stages of invasion, are so nearly alike, clinically, that the only positive means of making a diagnosis is the microscope. If a violent acute conjunctivitis is found in an individual who has an acute specific urethritis, one may suspect the presence of the gonococcus in the eye. Or, if one of the school children shows an eye that is red, painful, intolerant of light and full of secretion and says that the other children at home have or have had the same thing, one may reasonably suspect a case of pink eye. But the safe way is the smear, the aniline stain which all of these organisms take, and the microscope.

In the newborn the judgment of the first-aid man will be severely taxed, when about the third day his attention will be called to the presence of pus in the corner of the eyes and he finds it necessary to decide whether he has to deal with the coccus of Neisser or the pneumococcus, streptococcus, diplobacillus, bacterium coli or some variety of staphylococcus, any of which may be the causative factor in ophthalmia neonatorum. As a rule, however, if the gonococcus is not present, the pneumococcus is, the gonococcus prevailing in about 70 per cent of these cases. While attempting to determine the bacteriology of their infection, he will do well to start treatment at once, and the surest of all remedies is silver nitrate in 4 per cent solution, painted on the mucous membrane of the everted lids once in twenty-four hours. The conjunctival sac should be carefully irrigated with saturated boric acid solution every hour for the remainder of the twenty-four. The lid margins should be anointed at frequent intervals with plain, sterile vaseline to prevent sticking and retention of pus.

In discussing the afflictions of early life, it is worth while to call attention to the subject of squint of any variety which may be brought to the notice of the general practitioner, and to suggest that this is not an affliction to be neglected, for a squinting eye, if unattended, is doomed to more certain blindness than is a case of injury from external violence. The process is slow and insidious and the victim has no warning of danger to sight until central vision is gone and the eye, as far as useful vision is concerned, is lost. Nearly, if not quite all, cases of non-paralytic squint, if taken early enough, can be remedied by careful refraction and properly fitting glasses. Parents of squinters should be advised accordingly and should never be told to wait until the child starts to school or to let it go entirely and allow him to outgrow it; this he probably would do, but would lose an eye in the outgrowing process.

EAR

Emerson, F. P.: Changing Methods and Advances in the Treatment of Progressive Deafness from Chronic Secretory Otitis Media. *Boston M. & S. J.*, 1917, clxxvii, 583.

The author's conclusions are as follows:

1. Every case of chronic progressive middle ear deafness has a primary focus, which persists as a low-grade infection, subject to acute exacerbations. In chronic cases such foci are usually multiple.

2. This primary focus is usually constant for the individual, and is indicated by the location of exacerbations.

3. Every case showing variable hearing can usually be improved to the standard of the best hearing in that particular case.

4. So-called cases of nerve deafness of non-specific origin are in the experience of the author due to toxæmia from some definite focus.

5. Inflation in chronic cases is unscientific and harmful as a routine, as the tube is already open and has partially lost its tone in the majority of cases. In those cases where the tube is not open, it does no good to remove the obstruction.

6. Nasal obstructions have no harmful effect upon the middle ear unless infection is present. Such obstructions, however, are the primary cause in the development of imperfect drainage, which predisposes to infection, and which is always present in cases of chronic secretory otitis media originating in the nose.

7. Foci, whether in the sinuses, tonsils, mandible or epipharynx, are potential factors in the progress of chronic progressive otitis media, either by direct extension or through the lymph and blood streams.

8. No hearing test will forecast the improvement in a given case as long as the Rinne test is positive with variable hearing.

9. Whatever the macroscopic appearance of the membrana tympani, the cause of the deafness is active for a long time outside the middle ear as a toxæmia or low-grade infection subject to acute exacerbations.

10. Constitutional diseases have but little effect upon the course of chronic secretory otitis media, except to lower the patient's resistance and make him more susceptible to exacerbations of his localized focus or foci. OTTO M. ROTT.

SURGERY OF THE NOSE, THROAT, AND MOUTH

NOSE

Ferreri, G.: Malignant Papilloma of the Nose and Right Maxillary Sinus (Papilloma maligno del naso e del seno mascellare di destra). *Policlin.*, Roma, 1917, xxiv, *sez. chir.*, 353.

Ferreri reports a case of nasal malignant papilloma in a man of 42 years. The nasal tumefaction spread to the right maxillary sinus which with the ethmoid was completely opaque to the diaphanoscope. The tumor originated from the right naris. The author operated by Durante's method for superior maxillary resection and removed the greater part of the spongy mass of the tumor from the right nasal fossa, and also removed the anterior walls of the sinus and the orbital floor with the scalpel and Gigli saw. The tumor mass filled all the antral cavity and extended upward toward the ethmoid and the internal orbital angle.

The author reviews the literature of nasal papillomata since Michel reported the first case in 1876. There are two varieties: the soft papilloma; and the true or hard papilloma, the latter including the true fibro-epithelial tumors. The recorded number of the latter variety is small. From the histological description the case reported by Ferreri belongs to this class of tumors.

The author believes that such tumors have an ethmoidal origin. As regards statistics of malignant nasal tumors, Finder found 10 cases of nasal sarcoma and 2 of nasal carcinoma in 28,000 patients. In 849 cases of sarcoma and 554 of carcinoma Gurtl found 15 of the former and 4 of the latter nasal.

It is evident that primary carcinoma of the nasal fossæ is rare. It is generally found on the septum, especially on the anterior part, according to Kummel, although Tissier finds that the ethmoidal labyrinth is more easily involved.

W. A. Brennan.

Goddard, H. M.: Deviation of the Septum and Submucous Resection. *N. Y. M. J.*, 1917, cvi, 398.

Goddard reports his successful treatment in many hundreds of cases of the common nasal deformity, septal deviation, by its most suitable corrective remedy, submucous resection. The object of the operation is to restore to as nearly a normal state as possible those functions which the nose is endowed with. To rectify breathing errors, to substitute a well-formed for an ill-shaped nose, to avoid possible facial despoliation, as well as to overcome complicating diseases of local or systemic nature, is the ultimate aim.

Before attempting alleviation or cure, it is essential that the physician be well acquainted with the physiologic and anatomic pathology of the nose incident to septal deviation. In the author's opinion, trauma during childhood is probably the most common cause contributing to the production of this condition. The many complications and sequelæ such as ethmoidal, frontal, and antrum disease create many unpleasant symptoms in the form of nasal fullness, pain, headache, vertigo, etc., and sometimes even remote reflex disturbances.

The author defers operation for septal deviation until the patient has attained adolescence or early adult age. Only those deviations that are obstructive demand operation, and the operation of choice, because of its uniformly good results, is submucous resection. If properly performed, it is ideal. The discomfort to the patient is practically negligible, no mucous membrane is destroyed, danger to the turbinates is averted, and no redundancy or resiliency of tissue is noted. The conserving effect of this operation promises a reestablishment of normal physiologic nasal processes in the sense of proper tissue function, nasal ventilation, and nasal drainage.

The author's technique, briefly stated, requires proper anæsthetization of the mucosa overyling the septum as well as depletion of the peripheral vessels through the local employment of 20 per cent cocaine solution and 1:1,000 adrenalin chloride solution, for about 15 to 20 minutes, followed by the injection of a 2 per cent solution of novocaine at the junction of skin and mucosa. Then an incision is made at the junction of the skin and mucosa, starting high and extending down into the floor of the nose. This incision is made deep enough to expose the glistening cartilage. A few rapid strokes with a Carter curette separates the mucosa from the cartilage. An incision is next made through the cartilage to the basement membrane of the opposite side, and with the Carter instrument a rapid dissection is again made as on the first side. With the membranes of both sides thus freed, the cartilage is engaged between both blades of a nasal speculum. A nick in the cartilage is then made with pointed scissors as high up as required to remove the deviated portion. The incision in the cartilage is continued with a small swivel knife, and with the speculum still in place, all deviated portions are removed. The flaps are replaced and retained in position by a Simpson sponge splint on each side. The following day all dressings are removed and the patient is thereafter seen daily until complete healing has occurred.

The two chief complications during operation encountered by the author are hæmorrhage and

perforation. The former is usually controlled by the application to its site of adrenalin chloride packing; the latter is let alone, no attempt being made to close it. The main sequelæ to the operation are hæmatoma, abscess of the septum, infection of the eustachian tube, sinking of the nasal bridge below the nasal bones, and acute ethmoiditis. Infection is apt to occur despite every precaution taken.

Kaempfer, L. G.: Nasal Septum Deformity in Children. *Laryngoscope*, 1917. xxvii, 868.

The youngest child was five weeks old, the oldest seven years. The majority of the children ranged in age from two months to four years. There were 99 children in the first year of life, 42 under six months, and 57 between six and twelve months old. Between one and two years of age there were 57 children; between two and three, there were 38; from the fourth to the fifth year, there were 4 children and one each in their sixth and seventh years. Of the total, there were 49 per cent of septal deformities, 20 per cent of frank deviation, and 30 per cent of septal thickenings. As an evidence that the thickened septa were but forerunners of frank deviations later on, are cited the following statistics:

In the first year the proportion of true deviation is 8 per cent and in the fourth year 55 per cent. The thickened septa which are 25 per cent in the first year and 45 per cent in the second, fall to 32 per cent in the third and 15 per cent in the fourth year.

Less than 5 per cent of the total cases with deviation had hypertrophied inferior turbinates. About 4 per cent had hypertrophy of the middle turbinates.

The following statistics deal with the relationship of septal deviations to hypertrophied tonsils:

Of the 108 children with septal deformity, 85 per cent had hypertrophied tonsils. Of 112 children without septal deformity, 77 per cent had hypertrophied tonsils. Of the 180 cases of hypertrophied tonsils, 53 per cent had septal deformity, while of the 27 cases with small tonsils, only 18 per cent had septal deformity.

The author believes that hypertrophied tonsils and septal deformities have a common etiological factor and that factor seems to be the chronic rhinitis. A vicious circle is started beginning with the narrow nose, which causes rhinitis, and this in turn causes increasing growth of tonsils and adenoids. The latter increases again the rhinitis, which in turn aggravates the septal deformity.

OTTO M ROTT.

THROAT

Sterckmans, C.: A Case of Intrinsic Cancer of the Larynx; Tracheothyrotomy; Total Laryngectomy (Relation d'un cas de cancer intrinsèque du larynx; trachéo-thyrotomie; laryngectomie totale). *Arch. méd. belges*, 1917, lxx, 605.

A soldier developed acute laryngobronchitis from exposure. Later a subglottal polypus was diagnosed with paralysis of the vocal cord. Two years after commencement of the disease the man's condition necessitated a tracheothyrotomy, and two small tumors were removed from the region of the glottis and a tracheal cannula inserted. Examination of the tumors showed them to be an epithelioma. Rapid growth however occurred and the author decided on a total laryngectomy, following Sebileau's technique.

The postoperative course was satisfactory except for slight fever during the first three days. The man was up and about one month after operation and his general condition was excellent.

After laryngectomy patients who succumb generally do so within the first five days after operation. Careful and continuous postoperative attention is required both as regards hospitalization, feeding, dressings, etc.

The most interesting point in this case is the extraordinary rapidity with which the tumor developed after it had remained quiescent during more than two years. The impetus given to the cancerous tumor by the tracheothyrotomy and the probably incomplete removal of the tumor explains the recurrence of the development after the first intervention. It is also known that aveolar epithelioma habitually has a very rapid progress.

Regarding the technique followed, i.e., exolaryngeal laryngectomy, the author thinks that there is an exaggerated apprehension concerning it. The operation is delicate and the mortality high, 20 to 25 per cent.

The author thinks it is perhaps unique in the annals of laryngectomy that within seven weeks in the same patient under unfavorable circumstances a thyrotomy should be followed by a successful total laryngectomy. The case bespeaks radical rather than palliative operative treatment when it is a question of a malignant tumor of the throat.

W. A. BRENNAN.

BIBLIOGRAPHY *of* CURRENT LITERATURE

GENERAL SURGERY—SURGICAL TECHNIQUE

NOTE.— The bold face figures in brackets at the right of a reference indicate the page of this issue on which an abstract of the article referred to may be found.

Operative Surgery and Technique

Z-plastic surgery. S. L. McCURDY. Internat. J. Surg., 1917, xxx, 389.

Postoperative treatment of hydatid cysts. A. A. PARODI. Crón. méd., Lima, 1917, xxxiv, 423.

A note on skin-grafting. N. H. JOY. Brit. M. J., 1917, ii, 857.

After-care in abdominal operations. H. W. JONES. N. Y. St. J. Med., 1917, xvii, 458.

Aseptic and Antiseptic Surgery

Modern antiseptics. A. P. GOULD. Brit. M. J., 1917, ii, 677. **[311]**

Specificity as regards antiseptics. K. TAYLOR. Arch. de méd. et pharm. mil., Par., 1917, lxvii, 48.

Liquid petrolatum as an antiseptic. H. L. JENKIN. Illinois M. J., 1917, xxxii, 416.

Iodized hydride antisepsis a half century ago. R. F. OFRIAS. Med. Rec., 1917, xcii, 1075.

Use of acetozone as a general surgical antiseptic. HEWLETT. J. Roy. Army M. Corps, Lond., 1917, xxix, 232.

Note on the germicidal power of flavine. R. T. HEWLET. Med. Bulletin, 1917, i, 31.

Use of flavine in the treatment of infected gunshot wounds. R. B. CARSLAW. J. Roy. Army M. Corps, Lond., 1917, xxix, 488.

Flavine and brilliant green. C. H. BROWNING, R. GULBRANSEN, and others. Med. Bulletin, 1917, i, 28.

Proflavine in septic wounds. F. V. ELKINGTON. Brit. M. J., 1917, ii, 860.

The relative germicidal efficiency of antiseptics of the chlorine group and acriflavine and other dyes. H. D. DAKIN and E. K. DUNHAM. Brit. M. J., 1917, ii, 641. **[312]**

The principles of the technique of wound sterilization. A. CARREL. Arch. de méd. et pharm. mil., Par., 1916, lxv, 489.

Gutta-percha hyperthermic dressings. BOUET-HENRY. Bull. Acad. de méd., Par., 1917, lxxviii, 627. **[312]**

Potassium permanganate in the treatment of anaerobic infection of wounds. F. B. GURD. J. Roy. Army M. Corps, Lond., 1917, xxix, 202.

A method of wound treatment by anaerobes. R. DONALDSON and J. L. JOYCE. Med. Bulletin, 1917, i, 44.

The Carrel method. M. UFFOLTZ. Arch. de méd. et pharm. mil., Par., 1916, lxv, 848.

A report on the Carrel-Dakin treatment of wounds. A. P. GOULD and others. J. Roy. Army M. Corps, Lond., 1917, xxix, 616. **[313]**

Tube for the administration of Dakin's fluid in wound treatment. NIMIER. Arch. de méd. et pharm. mil., Par., 1916, lxv, 860.

The use of the Dakin-Carrel method in the treatment of infected wounds. J. C. LUMPKIN. Bull. Univ. Md. Schl. Med., 1917, ii, 157.

A modification of Carrel's tube for use, especially where there is danger of pressure on tissues. H. D. LEVICK. Brit. M. J., 1917, ii, 762.

The action of hypochlorites employed in the irrigation of war wounds. O. GUILLAUMIN and G. VIENNE. Arch. de méd. et pharm. mil., Par., 1916, lxv, 1.

Syphon for discontinuous irrigation of wounds. PRIMOT. Rev. gén. de clin. et de thérap., Par., 1917, xxxi, 792.

Indications inviting primary and secondary sutures of war wounds. G. GROSS and H. TISSIER. Med. Bulletin, 1917, i, 33.

Primary suture of war wounds. G. GROSS and others. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 1806. **[314]**

Polyvalent serum in the treatment of wounds and consecutive infections. E. LECLAINCHE and H. VALLÉE. Arch. de méd. et pharm. mil., Par., 1917, lxvi, 775.

The chemical disinfection of wounds by the use of dichloramin-T. A. MCGLANNAN. Bull. Univ. Md. Schl. Med., 1917, ii, 154.

A new treatment for staphylococcic infections. J. E. R. MCDONAGH. Med. Press & Circ., 1917, civ, 431.

Some of the newer methods of treating wounds. F. C. E. MATTISON. Med. Rec., 1917, xcii, 937.

Wound infection among lathe workers; an investigation into some of the factors causing wound infection in industrial surgery and methods of obviating them. M. D. SHIE. J. Am. M. Ass., 1917, lxix, 1927.

A convenient method of preparing eusol. J. L. SMITH, J. RITCHIE, and T. BETTIE. Med. Bulletin, 1917, i, 27.

Comparison of methods of treating wounds. K. TAYLOR. Med. Bulletin, 1917, i, 25.

Treatment of bacillus pyocyaneus infection. K. TAYLOR. Med. Bulletin, 1917, i, 41.

Treatment of wounds infected with bacillus pyocyaneus. P. TURNER. Med. Bulletin, 1917, i, 42.

The McDonald solution. C. S. WHITE and O. HUNTER. Am. J. Obst., N. Y., 1917, lxxvi, 986.

Anæsthetics

Record keeping in anæsthesia. R. M. WATERS. St. Paul M. J., 1917, xix, 370.

Anæsthesia and the anæsthetist. F. S. ECHOLS. Virg. M. Semi-Month., 1917, xxii, 375. **[314]**

Anæsthesia and its relation to good surgery. C. H. BRANCH. J. Mich. St. M. Soc., 1917, xvi, 496.

Crile's method of anoci-association. I. LUZOIR. Presse méd., Par., 1917, p. 695.

Ether clonus. W. D. ANDERSON. Lancet, Lond., 1917, cxciii, 949.

An anatomical and experimental study of sacral anæsthesia. J. E. THOMPSON. Ann. Surg., 1917, lxvi. **[314]**

Local anæsthesia in major surgical operations. A. C. SCOTT. Texas St. J. Med., 1917, xiii, 269.

Limitations of local anæsthesia in surgical operations. L. F. WATSON. Interst. M. J., 1917, xxiv, 1175.

Surgical Instruments and Apparatus

Fracture reduction with the aid of a simple traction apparatus. R. SOUTTER. J. Am. M. Ass., 1917, lxix, 2035.

Apparatus for continuous extension in limb fractures. LANGE. Bull. et mém. Soc. de chir. de Par., 1917, xliii.

Apparatus for thigh and leg fractures. DREFUS. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 2099.

A new apparatus for the treatment of gunshot fractures of the humerus. G. M. COWPER. J. Roy. Army M. Corps, Lond., 1917, xxix, 594.

A metallic amputation retractor for advanced ambulances. R. DIDIER. Arch. de méd. et pharm. mil., Par., 1916, lxv, 200.

Metallic apparatus for use after astragalectomy, etc. A. LECLERCQ and H. FRESSON. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 1670.

An orthopedic innersole for shoes. H. W. MARSHALL. Am. J. Orthop. Surg., 1917, xv, 788. **[315]**

A gutter ankle splint. W. J. MERRILL. Am. J. Orthop. Surg., 1917, xv, 840.

A device for suspending fractured limbs during transport. O. RICHARDS. J. Roy. Army M. Corps, Lond., 1917, xxix, 331.

Forceps for extraction of projectiles under the control of X-rays. DUCÉLLIER. J. de radiol., Par., 1917, ii, 667.

Chondrotome for cranioplasty. A. GOSSET. Med. Bulletin, 1917, i, 39.

Salvarsan clamp needle holder. J. B. MCNERTHNEY. Northwest Med., 1917, xvi, 377.

Aspiration or vacuum suction apparatus. R. C. MYLES. N. Y. M. J., 1917, cvi, 629. **[315]**

A method for filing necropsy sections. W. L. ROBINSON. J. Am. M. Ass., 1917, lxix, 2037.

SURGERY OF THE HEAD AND NECK

Head

Indications for operation on traumatic head cases. E. H. NICHOLS. Boston M. & S. J., 1917, clxxvii, 508. **[315]**

Simple method of repairing defects of the scalp. C. WALLACE. J. Roy. Army M. Corps, Lond., 1917, xxix, 713.

A case of tic douloureux treated by the avulsion method of Ernest LaPlace. H. H. CURTIS. Laryngoscope, 1917, xxvii, 891.

Gunshot wounds of face and thighs. G. H. COLT. J. Roy. Army M. Corps, Lond., 1917, xxix, 337.

Radiography of the spheno-maxillo-temporal region of the face. C. H. VILLANDRE. J. de radiol., Par., 1917, ii, 641.

Shell wound of the face; repair operations. H. MORESTIN. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 1397.

Restoration of facial mutilations by strips taken from the frontal region. MOLINIÉ and LANNOIS. Lyon méd., 1917, cxxvi, 562. **[316]**

Injury to the eye, complicated with abscess of the brain and terminating fatally; autopsy. G. V. MILLER. Brit. J. Ophth., 1917, i, 751.

Nasal reconstruction; with a note on nature's plastic surgery. J. L. AYMARD. Lancet, Lond., 1917, cxciii, 888.

Rhinoplasty and nasal prosthetics. PONT. Lyon méd., 1917, cxxvi, 508.

Lateral sinus thrombosis. A. S. KAUFMAN. N. Y. M. J., 1917, cvi, 1216. **[316]**

Frost-bite as a predisposing factor in carcinoma of the ear. R. L. SUTTON. J. Am. M. Ass., 1917, lxix, 2171.

Significance of blood examinations in aural surgery. H. HAYS. Med. Times, 1917, xlv, 344.

Removal of a massive lipoma from the parotid region. R. MANWARING-WHITE. Practitioner, Lond., 1917, xcix, 579.

Calcification in the pineal gland. E. P. BOAS and T. SCHOLTZ. Arch. Int. Med., 1917, xxi, 66.

Report of a case of recovery from a compound comminuted, depressed fracture of the frontal bone, with loss of brain substance. T. H. HANCOCK. Internat. J. Surg., 1917, xxx, 356. **[316]**

A case of congenital tumor in the fronto-nasal region. D. M. GREIG. Edinb. M. J., 1917, xix, 383.

Treatment of gunshot fractures of the jaws. L. DESGOUTTES, and E. BRESSOT. Arch. de méd. et pharm. mil., Par., 1915, lxiv, 8.

Complete fracture of the upper jaw. H. J. FOOKS. J. Roy. Army M. Corps, 1917, xxix, 717.

The third molar in the evolution of the jaw. J. H. LEVINE. Dental Cosmos, 1917, lix, 1203.

Cartilage grafts in the repair of extensive losses of the jaw. H. MORESTIN. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 1712.

Prosthetic treatment of lower jaw fractures. P. REAL and L. GAUTHIER. Ann. di odont., Roma, 1917, ii, 479. **[317]**

Luetic osteomyelitis of the cranial bones. M. R. CASTEX. Prensa méd. argent., Buenos Aires, 1917, iv, supp. 51.

Cranial wounds. H. BICHELONNE. Arch. de méd. et pharm. mil., Par., 1917, lxvii, 61. **[317]**

Cranial gunshot wounds in war surgery. MONPROFIT and COURTY. Arch. de méd. et pharm. mil., Par., 1917, lxvi, 790. **[317]**

A series of fractured skulls from the surgical records of the Boston City Hospital, 1902–1917. C. T. HARRIS and H. A. NISSEN. Boston M. & S. J., 1917, clxxvii, 870. **[317]**

Radiologic study of fractures in the base of the skull. F. PERUSSIA. Radiol. med., Torino, 1916, iii, 297.

Surgical intervention in cranio-encephalic wounds. M. DONATI. Policlin., Roma, 1917, xxiv, sez. prat., 1340.

End-results of trepanations for war injuries. N. LAPAYRE. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 2048. **[318]**

Repair of injuries to the skull by perforated plates. A. B. MITCHELL. Med. Bulletin, 1917, i, 36.

External cranial prosthetics. MONOD-HERZEN. Bull. Acad. de méd., Par., 1917, lxxviii, 159.

Anatomoclinical study of metallic restorations of cranial wall. P. SEBILEAU. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 1967.

Value of thickness in cartilage cranioplastic grafts. TAVERNIER. Lyon méd., 1917, cxxvi, 569.

The repair of cranial defects by means of cartilaginous grafts. H. L. W. WOODROFFE. Med. Bulletin, 1917, i, 37.

Some aspects of internal hydrocephalus. C. G. LEO-WOLF. N. Y. St. J. Med., 1917, xvii, 555.

Chronic internal hydrocephalus; the newer methods for its recognition and treatment. C. A. ELSBERG. Interst. M. J., 1917, xxiv, 1114. [318]

Internal hydrocephalus. W. E. DANDY and K. D. BLACKFAN. Am. J. Dis. Child., 1917, xiv, 424.

A series of cases of meningitis cured by intrarhachidean injections of antimeningococcic serum. M. RIZZI. Policlin., Roma, 1918, v, sez. prat., 54.

Treatment of tuberculous meningitis by intrarhachidean injections. F. RAMOND and FRANCOIS. Bull. et mém. Soc. méd. d. hôp. de Par., 1917, lxi, 1058.

Cases of meningococcus septicæmia. W. ANDERSON and others. J. Roy. Army M. Corps, Lond., 1917, xxix, 463.

Forty-five cases of cerebrospinal meningitis observed in an ambulance at the front. A. RICHAUD and L. JOLTRAIN. Arch. de méd. et pharm. mil., Par., 1916, lxv, 649.

Intramedullar tumor successfully removed. O. FOERSTER. Berl. klin. Wchnschr., 1917, No. 14.

An interesting pontine syndrome. M. OSNATO. N. Y. M. J., 1917, cvi, 1026.

Punctiform hæmorrhage of the brain in gas poisoning. F. W. MOTT. J. Roy. Army M. Corps, Lond., 1917, xxix, 1.

Remarks on a case of two simple abscesses of the occipital lobe of the brain. T. MARTINI and J. I. BERTERINI. Prensa méd. argent., Buenos Aires, 1917, iv, 254.

Primary pneumococcic cerebral abscess. M. VALABREGAR. Pediat. espan., Madrid, 1917, vi, 247. [320]

Deep intracerebral abscess; operation with Martel's technique. KLEIN. Presse méd., Par., 1917, p. 502.

Cerebral tumor. M. R. CASTEX. Prensa méd. argent., Buenos Aires, 1917, iv, supp. 53.

Ether narcosis in cerebral wounds. C. BESTA. Gazz. d. osp. e d. clin., Milano, 1917, xxxviii, 711. [320]

Experimental regional obliteration of cerebral vessels. T. SENISE. Ann. di nevrol., Napoli, 1917, xxxiv, 81. [320]

Treatment of hypophyseal tumors and acromegaly. A. DE CASTRO. Brazil-med., 1917, xxxi, 415.

Hypophysis and polyuria. B. A. HOUSSAY and I. ROMANA. Prensa méd. argent., Buenos Aires, 1917, iv, 284.

Some properties and actions of tethelin, the active constituent of the anterior lobe of the pituitary body. T. B. ROBERTSON. Calif. St. J. Med., 1917, xv, 491.

Neck

Salivary calculus. W. W. CARTER. Laryngoscope, 1917, xxvii, 881.

Dislocation of the cervical vertebræ. K. SPEED. Ann. Surg., Phila., 1917, lxvi, 644.

Three cases of ligature of common carotid artery at a casualty clearing station. I. I. M. SHAW. J. Roy. Army M. Corps, Lond., 1917, xxix, 333.

Sarcoma of the intercarotid body. R. H. FOWLER. Med. Times, 1917, xlv, 341.

Blood sugar in hyperthyroidism. W. DENIS, J. C. AUB, and A. S. MINOT. Arch. Int. Med., 1917, xx, 964.

A differential history form for enlargements of the thyroid gland. F. CHRISTOPHER. Med. Rec., 1917, xcii, 985.

An intrathoracic thyroid tumor; report of a case with autopsy findings. H. M. MOSES. Med. Rec., 1917, xcii, 1025.

Carcinoma of lateral aberrant thyroid. M. G. WOHL. Interst. M. J., 1917, xxiv, 1044. [320]

The thyroid and parathyroid glands. M. WHITE. Chicago M. Recorder, 1917, xxxix, 559.

The thyroid in gynecology. H. E. HAYD. Am. J. Obst., N. Y., 1917, lxxvi, 958.

Cyst of the thyroid consecutive to a bullet wound. HALLER. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 2085.

The relation of the thyroid to the other ductless glands. E. C. KENDALL. J.-Lancet, 1917, xxxvii, 768.

A review of the history of the disease now known as goiter. H. M. BROWN. Wis. M. J., 1917, xvi, 240.

Malignant goiter. A. CROTTI. Ohio St. M. J., 1917, xiii, 820.

Factors for safety and ultimate results in goiter operations. C. POTTER. J. Missouri St. M. Ass., 1917, xiv, 506.

Exophthalmic goiter. C. S. MILLER. N. Y. M. J., 1917, cvi, 1210. [321]

Discussion of the surgery of exophthalmic goiter. T. P. DUNHILL. Lancet, Lond., 1917, cxciii, 883. [321]

The treatment of exophthalmic goiter by X-rays. F. HERNAMAN-JOHNSON. Lancet, Lond., 1917, cxciii, 980.

The surgery of exophthalmic goiter. L. WILLIAMS. Lancet, Lond., 1917, cxciii, 950.

SURGERY OF THE CHEST

Chest Wall and Breast

Penetrating gunshot wounds of the chest, and their treatment. G. E. GASK and K. D. WILKINSON. Brit. M. J., 1917, ii, 781. [322]

The early operative treatment of penetrating gunshot wounds of the chest. F. J. HATHAWAY. Brit. M. J., 1917, ii, 582. [323]

Mammary malignant neoplasms in infancy. BLANC Y FORTACIN. Siglo méd., Madrid, 1917, lxiv, 998.

Successive double breast cancer treated by X-rays and radium. A. PIGA and A. FERRAN. Rev. españ. de electrol. y radiol. méd., 1917, p. 150.

Cancer of the male breast. L. ROSINI. Gazz. med. di Roma, 1917, xliii, 261. [323]

Traumatic injuries to the thoracic duct. O. J. FAY. Interst. M. J., 1917, xxiv, 1055. [324]

Brachiothoracic coalescence. F. DE MAGALHAES. Brazil-med., 1917, xxxi, 419.

Intrascapular thoracic disarticulation for axillary lymphosarcoma. BLANC. Bol. de la Rev. clin. de los hosp., Madrid, 1917, i, 9.

A case of extrathoracic cardiac ectopia. I. M. Q. ARELLANO. Gac. méd. de Carácas, 1917, xxiv, 210.

Report of a case of chylothorax. G. R. PISEK. Arch. Pediat., 1917, xxxiv, 929.

One thousand applications of artificial pneumothorax. A. LARRALDE. Gac. méd. de Carácas, 1917, xxiv, 170. [324]

Clinical and radioscopic researches on the remote sequelæ of pleural effusions, traumatic or spontaneous. PÉHU and DAGUET. Ann. de méd., Par., 1917, iv, 428. [324]

Apparatus for drainage of the pleura. P. DELBET. Paris chirurg., 1917, ix, 319.

Bullet in the mediastinal pleura extracted after nearly three years. PHOCAS. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 1668.

Bullet in the posterior mediastinum. A. T. H. NISBET. Brit. M. J., 1917, ii, 861.

Trachea and Lungs

Foreign body in the trachea; bronchoscopy and tracheotomy. G. A. Weill and Got. Rev. de laryngol., Par., 1917, xxxviii, 571.

Bronchoscopy and œsophagoscopy. A. D. McCannel. J.-Lancet, 1917, xxxvii, 704. [325]

Recent work on diseases of the lungs. A. J. Jex-Blake. Practitioner, Lond., 1917, xcix, 533.

Extensive calcification of the lungs as a distinct disease. F. Harbitz. Arch. Int. Med., 1917, xxi, 139.

Pulmonary hydatid cyst. L. Castillo. Rev. clín. de los hosp., Madrid, 1917, ii, 64.

Pulmonary abscess. Blanc y Fortacin. Rev. de med. y cirug. práct., Madrid, 1917, cxvii, 458.

Traumatic pulmonary tuberculosis. L. Giroux and Fabre. Bull. et mém. Soc. méd. d. hôp. de Par., 1917, xli, 1066.

Strangulated pulmonary hernia. P. Van Reeth, J. Voncken, and M. Stassen. Arch. méd. belges, 1917, lxx, 1142.

Projectile in the right pulmonary pedicle. V. Pauchet and G. Rouvillain. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 1660.

Fifteen late extractions of intrapulmonary projectiles. R. Olivier. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 2080. [325]

Two cases operated upon for intrapulmonary projectiles. Klein. Presse méd., Par., 1917, p. 502.

Stimulation of the respiration by sodium cyanide and its clinical application. A. S. Loevenhart, W. F. Lorenz, H. G. Martin and J. Y. Malone. Arch. Int. Med., 1917, xxi, 109.

Heart and Vascular System

Two cases of projectiles well tolerated in the walls of the heart. F. Escande and P. Brocq. Rev. de chir., Par., 1917, lii, 268. [325]

Immediate intervention in war wounds of the heart; two cases of recovery. Costantini and Vigot. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 2077.

The heart in surgery. L. F. Bishop. Internat. J. Surg., 1917, xxx, 374.

Pharynx and Œsophagus

A stone removed from the œsophagus of an insane patient. H. Arrowsmith. Laryngoscope, 1917, xxvii, 893.

SURGERY OF THE ABDOMEN

Abdominal Wall and Peritoneum

Abdominal sarcomas. V. Juaristi. Rev. clín. de los hosp., Madrid, 1917, ii, 52.

Penetrating gunshot wounds of abdomen. J. Carrera and I. O. Cano. Rev. de méd. y cirug., Habana, 1918, xxiii, 22.

An advanced surgical post for urgent abdominal wounds. M. Boigey. Arch. de méd. et pharm. mil., Par., 1915, lxiv, 418.

The pre- and postoperative treatment of abdominal wounds. U. Stoppato. Policlin., Roma, 1917, xxiv, sez. chir., 473.

Experimental study of peritonitis with reference to calcium sulphide and especially to iodine and ether in its treatment. D. D. Deneen. Am. J. Surg., 1917, xxxi, 317.

Drainage by the crural route in peritonitis consecutive to wounds of the inguinocrural region. S. Puglisi-Allegra. Policlin., Roma, 1918, xxv, sez. prat., 7.

The postoperative treatment of diffuse peritonitis. E. Roedelius. Deutsche med. Wchnschr., 1917, xliii, No. 10. [326]

Large simple dermoid cysts developed retroperitoneally. R. Viglini. Policlin., Roma, 1918, xxv, sez. prat., 9.

Two cases of removal of a bullet from the upper surface of the diaphragm. E. D. Telford. J. Roy. Army M. Corps, Lond., 1917, xxix, 114.

Peri-umbilical cutaneous agenesia; appendicectomy 12 hours after birth; recovery. M. Vargas. Siglo méd., Madrid, 1917, lxiv, 870. [326]

Hernia and appendicitis in the child. Veau. Bull. méd., Par., 1917, xxviii, 492. [327]

Diaphragmatic hernia; with report of a case of the so-called acquired condition. L. M. Murray and J. D. Morgan. Lancet, Lond., 1917, cxciii, 857. [327]

A case of traumatic hernia of the diaphragm proving fatal seven months after the wound. C. P. Symonds. J. Roy. Army M. Corps, Lond., 1917, xxix, 34.

Epigastric hernia without palpable swelling. A. V. Moschcowitz. Ann. Surg., Phila., 1917, lxvi, 300. [327]

Inguinal hernia in the male. S. Erdman. Ann. Surg., Phila., 1917, lxvi, 702.

Oblique inguinal hernia. A. M. Harvey. Chicago M. Recorder, 1917, xxxix, 555.

A new technique for the radical treatment of umbilical hernia in the adult. A. J. Bengolea. Rev. Asoc. méd. argent., Buenos Aires, 1917, xxvii, 409. [328]

Gastro-Intestinal Tract

The fractional test meal; a study of 377 fractional test meals, of which 139 are in proved pathologic conditions. C. P. Horner. J. Am. M. Ass., 1917, lxix, 1931.

Clinical manifestations and treatment of gas poisoning. M. Mandel and W. S. Gibson. J. Am. M. Ass., 1917, lxix, 1970. [328]

Studies in fractional estimations of stomach contents. B. B. Crohn and J. Reiss. Am. J. M. Sc., 1917, cliv, 857. [328]

Occult hæmorrhages. I. Boas. Muenchen. med. Wchnschr., 1917, lxiv, No. 23.

Restoration of gastro-intestinal continuity by means of anticolic gastrojejunostomy following partial gastrectomy for cancer of the pyloric end of the stomach. D. C. Balfour. Surg., Gynec. & Obst., 1917, xxv, 473. [329]

X-ray in peptic ulcer. L. G. Cole. N. Y. St. J. Med., 1917, xvii, 542. [330]

Peptic ulcer. J. B. Deaver. N. Y. St. J. Med., 1917, xvii, 529. [330]

Observations on a series of gastric and duodenal ulcers, dating over a period of two and a half years, with results up to date from a combined medical and surgical treatment. G. G. Richards. Northwest Med., 1917, xvi, 368.

Gastric and duodenal ulcers from a surgical point of view. A. Troell. Ann. Surg., Phila., 1917, lxvi, 664.

Symptomatology of peptic ulcer. G. R. Lockwood. N. Y. St. J. Med., 1917, xvii, 535.

Spontaneous obliteration of a cavity external to the stomach and communicating with it through a perforated ulcer. J. E. Else. Northwest Med., 1917, xvi, 370.

Recent advances in the diagnosis and treatment of ulcer of the stomach. L. F. WATSON. West. M. Times, 1917, xxxvii, 248.

Gastro-intestinal sepsis a cause of Ménière's symptoms. T. M. HOVELL. Brit. M. J., 1917, ii, 787.

Gastric polyposis. J. M. T. FINNEY and J. FRIEDENWALD. Am. J. M. Sc., 1917, cliv, 683. [331]

Benign and malignant achylias differentiated by gastric albumin. D. L. PENNEY. J. Missouri St. M. Ass., 1917, xiv, 522.

Historical and critical study of digestive tract diseases in early infancy. A. B. MARFAN. Nourrisson, Par., 1917, v, 321.

Treatment of gastro-intestinal hæmorrhages of the newborn. L. TRIOLLET. Arch. mens. d'obst. et de gynéc., Par., 1917, v, 354. [331]

The biologic method in some surgical cases of digestive fistulization. J. M. JORGE and F. L. SOLAR. Rev. Asoc. méd. argent., Buenos Aires, 1917, xxvii, 663.

Contribution to the study of hyperpepsia and hyperchloræmia. J. R. GOYENA and A. J. PETIT. Prensa méd. argent., Buenos Aires, 1917, iv, 235.

Quinine and urea hydrochloride. J. F. SAPHIR. N. Y. M. J., 1917, cvi, 1161. [331]

A method of gastrostomy. L. DEFONTAINE. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 1982. [332]

An uncommon type of bilocular stomach. CARRO. Rev. de med. y cirug. práct., Madrid, 1917, cxvii, 457.

The medical aspect of gastro-enterostomy. H. S. CARTER. Am. J. M. Sc., 1917, cliv, 851. [332]

Annular segmental gastrectomy. W. H. BARBER. Ann. Surg., Phila., 1917, lxvi, 672.

A rational constricting method of pyloric exclusion. F. ACHILLE. Gazz. d. osp. e d. clin., Milano, 1917, xxxviii, 1075.

Blood in the stools in duodenal ulcer. A. J. P. PACINI. Med. Rec., 1917, xcii, 942.

Retrograde intestinal gangrene with particular reference to the pathogenesis. B. QUARELLA. Riforma med., Napoli, 1917, xxxiii, 830.

Temporary enterostomy. C. BECK. Surg. Clin. Chicago, 1917, i, 1267.

Jejunostomy; the rational operation for obstruction of the bowels. A. I. MCKINNON. Med. Herald, 1917, xxxvi, 269.

Jejunostomy; its indications and methods. C. H. MAYO. J.-Lancet, 1917, xxxvii, 793. [333]

Right-sided position of the stomach in inflammatory conditions in the ileocæcal region. H. E. RUGGLES. Am. J. Roentgenol., 1917, iv, 577. [333]

Ileocæcal incompetency. L. G. COLE. Med. Clin. N. Am., 1917, i, 689.

New radiologic sign in ileocolic invagination. L. MANGINELLI. Policlin., Roma, 1917, xxiv, sez. med., 484.

Treatment of appendicular abscess. W. A. B. SELLMAN. Am. J. Obst., N. Y., 1917, lxxvi, 950.

Acute appendicitis; an analysis of 500 cases. F. BEEKMAN, M. K. SMITH, and S. EVERINGHAM. Am. J. M. Sc., 1917, cliv, 490. [333]

Suppurative appendicitis. I. A. ARNOLD. Internat. J. Surg., 1917, xxx, 344.

Right upper quadrant appendicitis. K. SPEED. Surg. Clin. Chicago, 1917, i, 1327.

Appendicitis in the war. ROUCHIER. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 1846. [334]

External pathology; synthetic study of appendicitis. A. A. MASCIOTRA and M. A. CARCAGNO. Rev. d. circ. med. argent. y cent. Estud. de med., 1917, xvii, 1350.

Left-sided appendicitis in situs inversus viscerum totalis. J. H. JACOBSON. Am. J. Obst., N. Y., 1917, lxxvi, 953.

Appendicitis and the gynecologist. R. T. MORRIS. J. Am. M. Ass., 1917, lxix, 2036.

Tuberculosis of the appendix. J. R. SCOTT. Ann. Surg., Phila., 1917, lxvi, 648.

Leiomyoma of the appendix; report of two cases. L. D. REDWAY. J. Am. M. Ass., 1917, lxix, 2175.

A case of a giant colon. T. B. NOBLE. Am. J. Obst., N. Y., 1917, lxxvi, 946.

Actinomycosis of the colon; ileosigmoidostomy; treatment of actinomycosis. A. J. OCHSNER. Surg. Clin., Chicago, 1917, i, 1203.

Ulceration of the colon in the neighborhood of gunshot wounds. J. S. DUNN and H. DRUMMOND. Med. Bulletin, 1917, i, 40.

Hirschsprung's disease; report of a case. R. W. BAIRD and G. C. KINDLEY. South. M. J., 1917, x, 846. [334]

Diverticulitis of the sigmoid with an abscess. W. A. DOWNES. Ann. Surg., Phila., 1917, lxvi, 730.

A study of the rectosigmoid. W. J. MAYO. Surg., Gynec. & Obst., 1917, xxv, 616. [334]

Anal and rectal fistula. J. R. PENNINGTON. J. Am. M. Ass., 1917, lxix, 1501. [335]

Cancer of the rectum. C. B. DAVIS. Surg. Clin. Chicago, 1917, i, 1221.

Carcinoma of the rectum; excision; transplantation of the sigmoid into the perineum; technique of operation. A. J. OCHSNER. Surg. Clin. Chicago, 1917, i, 1213.

Carcinoma of the rectum; treatment by local incision. A. D. BEVAN. Surg. Clin. Chicago, 1917, i, 1233.

Pathology, diagnosis, and treatment of internal hæmorrhoids. H. A. BRAV. N. Y. M. J., 1917, cvi, 1118. [335]

Treatment of hæmorrhoids. C. J. DRUECK. Chicago M. Recorder, 1917, xxxix, 547.

Excision of hæmorrhoids under local anæsthesia. E. E. MORRISON. J. Kansas M. Soc., 1917, xvii, 321.

Liver, Pancreas, and Spleen

Diagnosis of diseases of the gall-bladder. A. C. KIMBERLIN. J. Indiana St. M. Ass., 1917, x, 457.

Diseases of the gall-bladder; medical treatment. C. R. SOWDER. J. Indiana St. M. Ass., 1917, x, 460.

Carcinoma of the gall-bladder. C. MANZONE. Semana méd., Buenos Aires, 1917, xxiv, 428. [336]

The diagnosis and treatment of gall-stones. G. T. VAUGHAN. Am. J. Obst., N. Y., 1917, lxxvi, 982.

Calculus cholecystitis. L. DE BARROS. Brazil-med., 1917, xxxi, 405.

Stricture of the gall-bladder. W. F. FOWLER. Ann. Surg. Phila., 1917, lxvi, 679.

Gall-bladder trouble complicating disease of the internal genitalia. J. H. CARSTENS. Am. J. Obst., N. Y., 1917, lxxvi, 936.

Gall-bladder surgery. J. H. BRANHAM. Am. J. Obst., N. Y., 1917, lxxvi, 940.

Gall-bladder surgery. H. H. MARTIN. J. Indiana St. M. Ass., 1917, x, 463.

Cholecystectomy; indications and technique. R. S. FOWLER. Am. J. Surg., 1917, xxxi, 282.

Cholecystectomy versus cholecystotomy. H. A. DUEMLING. J. Indiana St. M. Ass., 1917, x, 466. [336]

Cholecystectomy; with a report of 65 cases operated upon for gall-bladder disease. G. TORRANCE. Am. J. Surg., 1917, xxxi, 323.

Cholecystectomy without drainage. A. M. WILLIS. J. Am. M. Ass., 1917, lxix, 1943. [337]

The radial cholesterin stone in gall-bladder surgery. H. J. VAN DEN BERG. Med. Rev. of Rev., 1917, xxiii, 829.

Malignancy of the biliary apparatus. W. G. VINCENT. Med. Rec., 1917, xcii, 933. [337]

The diversion of the pancreatic juice from the duodenum into the stomach; its effects upon the level of gastric acidity and upon the pancreas. E. G. GREY. J. Exp. Med., 1917, xxvi, 825. [338]

Acute pancreatitis. M. MAURIZI. Gazz. d. osp. e d. clin., Milano, 1917, xxxviii, 1091. [339]

The effect of pancreatectomy on the catalase content of the tissues. J. KENNEDY and W. E. BURGE. Arch. Int. Med., 1917, xx, 892.

Change in the peripheral blood consequent upon the diversion of the splenic blood into the general circulation. W. C. BURKET. J. Exp. Med., 1917, xxvi, 849.

The relation of the spleen to blood destruction and regeneration and to hæmolytic jaundice; the influence of splenectomy and of blood disintegration upon the production of bile pigment. K. GOTO. J. Exp. Med., 1917, xxvi, 795. [339]

Miscellaneous

Enteroptosis. R. UPHAM. J. Am. Inst. Homœop., 1917, x, 676.

Relation of hæmorrhoidal disease to the health balance. W. M. BEACH. Tr. Am. Proctol. Soc., N. Y., 1917, June. [340]

SURGERY OF THE EXTREMITIES

Diseases of Bones, Joints, Muscles, Tendons—General Conditions Commonly Found in the Extremities

Filling of infected bone cavities. V. BAYER. Muenchen med. Wchnschr., 1917, No. 19. [340]

Hypertrophic dyschondroplasia of the bones of the hand. BOSQUETTE. Lyon méd., 1917, cxxvi, 564.

Atrophy of the quadriceps in knee, leg and foot lesions. E. ANDRÉ. Arch. de méd. et pharm. mil., Par., 1915, lxiv, 696.

Note on some knee wounds. H. BICHELONNE. Arch. de méd. et pharm. mil., Par., 1916, lxv, 725.

Penetrating gunshot wounds of the knee. G. CAVINA. Policlin., Roma, 1917, xxiv, sez. prat., 1441. [340]

Hypertrophic villous synovitis of the knee-joint. P. H. KREUSCHER. Surg. Clin. Chicago., 1917, i, 1291.

Treatment of hip wounds. V. PAUCHET. Presse méd., Par., 1917, p. 701. [340]

Unilocular hydatid cyst of the tibia revealed by radiography. N. A. MIGNON. J. de radiol., Par., 1917, ii, 655.

Elephantiasis of the lower limb; application of buried rubber tubes; recovery. C. WALTHER. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 1652.

Osseous lesions from focal infections. W. B. OWEN. Mississippi Valley N. J., 1917, xxiv, 396.

Myositis ossificans developing in a clean incised abdominal wound. D. LEWIS. Surg. Clin. Chicago, 1917, i, 1119.

A case of pneumonic hypertrophying osteo-arthropathy. G. A. GUYE. Rev. méd. de la Suisse Rom., 1917, xxxvii, 760.

Myositis purulenta acuta caused by bacillus typhosus; report of a case. M. TERADA. J. Am. M. Ass., 1917, lxix, 2101. [341]

Displacements of bones as a cause of low back pain. F. J. FASSETT. Am. J. Orthop. Surg., 1917, xv, 832.

On the treatment of articular wounds of the knee. ROUVILLOIS and others. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 1603.

Arthritis following antityphoid injections. F. C. SIMPSON. Mississippi Valley M. J., 1917, xxiv, 394.

Anatomical and physiological bases underlying the treatment of injuries to muscles, bones and joints. A. KEITH. Med. Press & Circ., 1917, civ, 428.

Etiological factors in gross lesions of the large joints; observations from 1,100 consecutive necropsies. H. C. CLARK. J. Am. M. Ass., 1917, lxix, 2099. [341]

Prophylaxis of the septic complications of articular wounds. G. IMPALLOMENI. Chir. d. organ. d. mov., Bologna, 1117, i, 367.

Traumatic monomyoplegias. MALLY and CORPECHOT. Rev. de chir., Par., 1917, lii, 281. [341]

Acute osteomyelitis of the clavicle. C. J. HABHEGGER. Am. J. Surg., 1917, xxxi, 309. [341]

The Maryland epidemic of infantile paralysis in 1916. R. T. TAYLOR. Am. J. Orthop. Surg., 1917, xv, 759.

A case of congenital Dupuytren's contraction of the fingers. D. M. GREIG. Edinb. M. J., 1917, xix, 384.

Fungous diseases of the foot or madura foot in America. R. WINSLOW. Ann. Surg., Phila., 1917, lxvi, 496. [342]

Immediate suture and filiform drainage after incision of phlegmon of the forearm. H. CHAPUT. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 1652.

Phlegmons of the broad ligament. D. R. DE BENGOA. Arch. de ginec., obst. y pediat., Barcelona, 1917, xxx, 312.

Gangrene of the limbs. BAYKSEN. Muenchen med. Wchnschr., 1917, xliii, No. 19.

Fractures and Dislocations

Fractures. C. OGILVY. N. Y. M. J., 1917, cvi, 1157.

Fractures. F. A. BESLEY. Surg. Clin. Chicago, 1917, i, 1273.

Compound fractures. D. EVE. South Pract., 1917, xxxix, 463.

Report of cases of compound fracture treated by bismuth paste. H. R. LEIBINGER. J. Mich. St. M. Soc., 1917, xvi, 489.

Gunshot fractures and especially their displacements. E. DELORME. Arch. de méd. et pharm. mil., Par., 1917, lxvii, 1. [343]

Remarks on treatment of war fractures. L. DESGOUTTES and R. DUPONT. Arch. de méd. et pharm. mil., Par., 1915, lxiv, 195.

The modern methods of the treatment of fractures. F. R. ENGLAND. Canad. M. Ass. J., 1917, vii, 1076.

Shoulder luxation with fracture of neck of the humerus. TAVERNIER. Lyon méd., 1917, cxxvi, 568.

Reduction and retention of humerus fractures by the Hennequin apparatus. REY. Arch. de méd. et pharm. mil., Par., 1915, lxiv, 204.

Treatment of pelvic fractures and luxations. L. G. GAZZOTTI. Policlin., Roma, 1917, xxiv, sez. prat., 1410.

Traumatic dislocation of the pubic symphysis with important disastases, without urethrovesical lesions. J. TANTON. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 1636. [343]

Gunshot wounds of the femur. D. N. EISENDRATH. Surg. Clin. Chicago, 1917, i, 1309.

Fractures of the neck of the femur. P. DELBET. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 2088.

What is the best treatment for fracture of the neck of the femur? J. P. LORD. St. Paul M. J., 1917, xix, 302.

Extracapsular fracture of the neck of the femur treated by Delbet's operation. PHOCAS. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 2089.

The orthopedic treatment of subtrochanteric femur fractures. P. ALQUIER and J. TANTON. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 1637.

Separation of the lower epiphysis of the femur with anterior displacement and T-fractures. D. LEWIS. Surg. Clin. Chicago, 1917, i, 1105.

Therapeutic decalogue in femur fractures. SCHIASSI. Riforma med., Napoli, 1917, xxxiii, 897.

Treatment of exposed thigh fractures. A. ALARY. Arch. de méd. et pharm. mil., Par., 1915, lxiv, 54.

Improved apparatus for complicated fracture of the thigh. B. SHERWOOD-DUNN. Am. J. Surg., 1917, xxxi, 315.

Suspension and extension in the treatment of limb fractures. J. BLAKE. Arch. de méd. et pharm. mil., Par., 1916, lxvi, 289.

The treatment of fractures of the long bones. G. TAYLOR. J. Roy. Army M. Corps, Lond., 1917, xxix, 493. [343]

Old fracture of the patella. F. G. DYAS. Surg. Clin. Chicago, 1917, i, 1305.

Luxations of the knee with unicondylar fracture of the external tibial plateau. CASABIANCA and BERNARDBERG. Arch. de méd. et pharm. mil., Par., 1915, lxiv, 545.

Spontaneous fracture in the course of an osteomyelitis of the tibia. E. KIRMISSON. Rev. gén. de clin. et de thérap., Par., 1917, xxxi, 801.

Fractures of the os calcis. G. F. CAHILL. Ann. Surg., Phila., 1917, lxvi, 711. [343]

Surgery of the Bones, Joints, Etc.

The transformation of open fractures into closed fractures. M. LAGOUTTE. Med. Bulletin, 1917, i, 43.

Swinging elbow after joint resection treated by implantation of the humerus in the two extremities of the radius and cubitus. GAUDIER and JAMET. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 1626.

Late secondary resection of the right shoulder; regeneration of ten centimeters of bone. J. TANTON. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 1653. [344]

Gonarthrotomy for proliferating synovitis; removal of endo-articular polyp and recovery. N. FEDERICI. Gazz. d. osp. e d. clin., Milano, 1917, xxxviii, 1137.

Contribution to Volkmann's contracture. A. STEINDLER. Am. J. Orthop. Surg., 1917, xv, 741.

Tendon operations for gunshot injuries of the hand. L. MAYER. J. Am. M. Ass., 1917, lxix, 2107. [345]

Tendon suture. T. W. HARMER. Boston M. & S. J., 1917, clxxvii, 808. [345]

A new method of tubulizing a tendon when used as a free transplant. P. G. SKILLERN, JR. Med. & Surg., 1917, i, 1108. [345]

Transplant of bone graft in the treatment of unconsolidated fractures. CARDENAL. Therapia, Barcelona, 1917, ix, 731.

Report of a case of amputation of the thigh for gangrene consecutive to occlusion of the femoral artery by a bullet. BOECKEL. Lyon méd., 1917, cxxvi, 567.

Partial amputations of the foot. QUÉNU. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 1659.

Amputation in advanced line ambulances. PERRIN. Arch. de méd. et pharm. mil., Par., 1915, lxiv, 535.

The functional state of the stumps in war patients amputated in 1914–1915. T. TUFFIER. Arch. de méd. et pharm. mil., Par., 1916, lxv, 329. [346]

Orthopedics in General

Some of the limitations of military orthopedic surgery. M. O. HUGHES. Med. J. Austral., 1917, ii, 451.

Lumbosacral pains considered anatomically. G. G. DAVIS. Am. J. Orthop. Surg., 1917, xv, 803.

A combined medical and postural examination of 746 young adults. L. T. BROWN. Am. J. Orthop. Surg., 1917, xv, 774. [347]

The anatomical and physiological principles underlying the treatment of muscles, bones and joints. A. KEITH. Med. Press & Circ., 1917, civ, 488.

The movements of the sacro-iliac joints. E. F. CYRIAX. Edinb. M. J., 1917, xix, 370.

A report on forty cases of acute arthritis treated by the intravenous injection of foreign protein. R. L. CECIL. Arch. Int. Med., 1917, xx, 951.

The treatment of Pott's disease by autogenous tibial bone grafts; Albee's operation. T. AMBROSE. Med. J. Austral., 1917, ii, 413. [347]

Osteitis deformans. E. H. FUNK. Med. Clin. N. Am., 1917, i, 451. [348]

Stiff knee. C. MACLAURIN. Med. J. Austral., 1917, ii, 456.

The introduction of tenotomy. A. KEITH. Brit. M. J., 1917, ii, 858.

Congenital "genu recurvatum." M. FRANCHINI. Chir. d. organ. d. mov., Bologna, 1917, i, 268.

Anatomic iconology for surgical orthopedic cinematics. G. VANGHETTI. Chir. d. organ. d. mov., Bologna, 1917, i, 400.

Multiple aneurisms of the retinal arteries. J. A. PRINGLE. J. Roy. Army M. Corps, Lond., 1917, xxix, 497.

The treatment of rheumatoid arthritis of the hypertrophic type. J. L. PORTER. Internat. J. Surg., 1917, xxx, 280. [348]

The value of diagnosis in back lesions. J. W. SEVER. Boston M. & S. J., 1917, clxxvii, 857.

Mechanical and surgical treatment of anterior poliomyelitis. A. J. GILLETTE and C. C. CHATTERTON. J.-Lancet, 1917, xxxvii, 691. [348]

Radial paralysis apparently definite; tendon anastomosis and shortening of the tendon extensors; good functional result. P. MAUCLAIRE. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 1890.

Electrical treatment of infantile paralysis. E. H. GRUBBE. Illinois M. J., 1917, xxxii, 384.

The arterial pressure in old severe infantile paralysis cases. A. SOUQUES. Bull. et mém. Soc. méd. d. hôp. de Par., 1917, lxi, 1055.

The surgical treatment of infantile paralysis. M. S. HENDERSON. St. Paul M. J., 1917, xix, 365.

Evolution and treatment of gasseous gangrene. K. TAYLOR. Arch. de méd. et pharm. mil., Par., 1916, lxv, 838.

Some common foot conditions and their treatment. J. A. NUTTER. Canad. M. Ass. J., 1917, vii, 1081.

The so-called reflex club-foot and its surgical treatment. A. MOUCHET and R. TOUPET. Arch. de méd. et pharm. mil., Par., 1916, lxvi, 314.

Radiologic examination of supernumerary and sesamoid bones of the foot. C. GUARINI. Policlin., Roma, 1917, xxiv, sez. med., 498.

Notes on trench foot. R. T. DOBSON. Brit. M. J., 1917, ii, 717.

Frozen feet, or trench foot so-called. N. Y. M. J., 1917, cvi, 1176, 1225.

The neuromuscular re-education of the soldier. Med. J. Austral., 1917, ii, 453.

A discussion of the principles and practice of Hugh Owen Thomas. A. KEITH. Brit. M. J., 1917, ii, 824.

Central service of orthopedic surgery in the Troyes center. L. C. BAILLEUL. Arch. de méd. et pharm. mil., Par., 1915, lxiv, 186.

Re-establishment of the crippled. R. B. WADE. Med. J. Austral., 1917, ii, 452.

Cripples who should not be. J. T. NIX, JR. N. Orl. M. & S. J., 1917, lxx, 494.

Recent orthopedic surgery. V. MOXEY. Practitioner, Lond., 1917, xcix, 462. [349]

SURGERY OF THE SPINAL COLUMN AND CORD

Spina bifida; its operative treatment. E. H. BECKMAN, and A. W. ADSON. St. Paul M. J., 1917, xix, 357.

Vertebral deviations by war traumatisms. P. REDARD. Chir. d. organ. d. mov., Bologna, 1917, i, 257.

Two cases of spondylosis. R. H. SILVA. J. de radiol., Par., 1917, ii, 673.

Defects of differentiation of the vertebræ, especially of the fifth lumbar. BERTOLOTTI. J. de radiol., Par., 1917, ii, 673.

Cold lumbar abscess of vertebral origin cured by filiform drainage. H. CHAPUT. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 2092.

Functional ileus provoked by a prevertebral adenopathy in the course of a coxalgia. G. A. GUYE. Rev. méd. de la Suisse Rom., 1917, xxxvii, 769.

Cord and nerve affections causing low back pain. C. H. HENNINGER. Am. J. Orthop. Surg., 1917, xv, 814. [350]

First aid to injuries of the spine. C. E. BLACK. Med. Herald, 1917, xxxvi, 272.

The bone graft in tuberculous disease of the spine. T. H. MYERS. Internat. J. Surg., 1917, xxx, 347, 378. [350]

SURGERY OF THE NERVOUS SYSTEM

Some points arising in nerve injuries. H. S. SOUTTAR. Brit. M. J., 1917, ii, 817. [351]

The search for the radial nerve in the arm. V. PUTTI. Chir. d. organ. d mov., Bologna, 1917, i, 403.

Section of the cubital nerve; suture by "dedoublement." G. REGARD. Lyon méd., 1917, cxxvi, 570.

Brachial neuritis and sciatica. H. T. PATRICK. J. Am. M. Ass., 1917, lxix, 2176.

Eosinophilia of the lymphatic ganglions following resection of the sciatic nerve. N. LOEWENTHAL. Rev. méd. de la Suisse Rom., 1917, xxxvii, 729.

Treatment of sciatica, with an analysis of 91 cases. I. STRAUSS. J. Am. M. Ass., 1917, lxix, 2032.

Treatment of traumatic nerve lesions. J. A. SICARD. Arch. de méd. et pharm. mil., Par., 1915, lxiv, 1.

Redisposition of the ulnar nerve. R. KLAUSNER. Muenchen med. Wchnschr., 1917, lxiv, No. 19.

Manual treatment of the cervical sympathetic. E. F. CYRIAX. N. Y. M. J., 1917, cvi, 1021.

Large cold ganglionary abscesses cured by filiform drainage. H. CHAPUT. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 2093.

Surgery of the nerve-trunks. CHEVRIER. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 2056.

An experimental contribution to the study of division and functional restoration of nerves. E. DUROCEX and A. COUVREUR. Med. Press & Circ., 1917, civ, 369. [351]

Neurologic indications for and against operations in traumatic injuries affecting the central nervous system. J. J. THOMAS. Boston M. & S. J., 1917, clxxvii, 503. [352]

MISCELLANEOUS

Clinical Entities—Tumors, Ulcers, Abscesses, Etc.

The cancer problem and the world war. W. S. BAINBRIDGE. Maryland M. J., 1917, lx, 293.

Cancer and its surgical treatment. A. D. BEVAN. Colorado Med., 1917, xiv, 317.

An attempt to produce carcinoma by radium. W. S. LAZARUS-BARLOW. Brit. M. J., 1917, ii, 794.

Acute lymphatic leukæmia and lymphatic leucosarcoma; lymphatic leucosarcoma; anthrax; acute syphilitic glomerulonephritis; acromegalic giantism. D. SYMMERS. Interst. M. J., 1917, xxiv, 1003. [352]

Observations on the treatment of myelocytic leukæmia by radium. H. Z. GIFFIN. Boston M. & S. J., 1917, clxxvii, 686. [354]

The cause of sudden death in status lymphaticus. D. SYMMERS. Am. J. Dis. Child., 1917, xiv, 463.

A case of pluriglandular disturbance; organotherapy; cure. W. TIMME. Arch. Pediat., 1917, xxxiv, 901.

A case of granulomatosis. C. B. UDAONDO and M. M. CASTEIGTS. Rev. Asoc. méd. argent., Buenos Aires, 1917, xxvii, 515.

The surgical complications of typhoid and paratyphoid fevers. A. E. WEBB-JOHNSON. Lancet, Lond., 1917, cxciii, 813.

Local treatment of foruncles. H. B. WHITNEY. Colorado Med., 1917, xiv, 328.

A Clairton Clinic. A. W. COLCORD. Internat. J. Surg., 1917, xxx, 386.

The use of relaxation incisions in dealing with extensive unstable scars. J. S. DAVIS. J. Am. M. Ass., 1917, lxix, 2085.

The abiotic action of ultra-violet light. H. S. NEWCOMER. J. Exp. Med., 1917, xxvi, 841.

Notes on the use of the giant magnet. J. L. GIBSON. Med. J. Austral., 1917, ii, 533.

Studies of internal secretions in their relation to the development and condition of the teeth. W. J. GIES. Dental Cosmos, 1917, lix, 1238.

The pharmacology and therapeutics of the ductless glands preparations. C. E. DEM. SAJOUS. Penn. M. J., 1917, xxi, 178.

The interrelationship of female sex glands and the pituitary body. J. E. KING. Am. J. Obst., N. Y., 1917, lxxvi, 964.

Tuberculosis in infants. A. JOHNSTON. J. Am. Inst. Homœop., 1917, x, 693.

Report of two cases of sarco-endothelioma. A. R. MATHENY and A. B. WALLGREN. Penn. M. J., 1917, xxi, 143.

Lymphoscrotum. J. MANNINI. Rev. méd. d. Rosario, 1917, vii, 463.

The treatment of some cases of so-called pernicious anæmia; a regimen that has been found helpful. L. F. BARKER and T. P. SPRUNT. J. Am. M. Ass., 1917, lxix, 1919.

Hodgkin's disease; a report on the cases observed at the Collis P. Huntington Memorial Hospital from April, 1913, to July, 1916, with special reference to treatment with radium and the X-ray. C. C. SIMMONS and G. BENET. Boston M. & S. J., 1917, clxxvii, 819.

A discussion of the internal form of acute Hodgkin's disease. A. HOWELL. Practitioner, Lond., 1917, xcix, 565.

Some observations relative to gangrene resulting from serious frost-bite. M. BERTRAND. Med. Bulletin, 1917, i, 35.

The paraffin treatment of burns. A. J. HULL. Brit. M. J., 1917, ii, 788. [354]

A preliminary note on X-ray detection of the presence of cloth in wounds. N. MACLEOD. Brit. M. J., 1917, ii, 791. [355]

Two cases of myxœdema. E. F. LEONARD. Interst. M. J., 1917, xxiv, 1171.

Report on the use of American-made salvarsan. H. S. BAKETEL. Med. Times, 1917, xlv, 337.

Methods of preparing and using radio-active substances in the treatment of malignant disease, and of estimating suitable dosages. W. DUANE. Boston M. & S. J., 1917, clxxvii, 787. [355]

The effect of alcohol on the reproductive tissues. A. H. ARLITT and H. G. WELLS. J. Exp. Med., 1917, xxvi, 769.

Report on the treatment of myelogenous leukæmia with radium. F. W. PEABODY. Boston M. & S. J., 1917, clxxvii, 873.

The peripheral distribution of the nervus terminalis in an infant. C. BROOKOVER. J. Comp Neurol., 1917, xxviii, 347. [356]

The treatment of neurasthenia and psychasthenia following shell shock. R. T. WILLIAMSON. Brit. M. J., 1917, ii, 713.

An experimental study of surgical shock; preliminary report. J. ERLANGER, R. GESELL, H. S. GASSER, and B. L. ELLIOTT. J. Am. M. Ass., 1917, lxix, 2089. [356]

Some of the unsettled problems in surgery. S. J. MIXTER. J.-Lancet, 1917, xxxvii, 759. [356]

Surgical "don'ts." C. H. WHITEFORD. Med. Press & Circ., 1917, civ, 472.

When to operate. M. CASPER. Mississippi Valley M. J., 1917, xxiv, 389.

Operative risk in cardiac disease. J. M. BLACKFORD, F. A. WILLIUS, and S. B. HAINES. J. Am. M. Ass., 1917, lxix, 2011.

Sera, Vaccines, and Ferments

Complement fixation test for tuberculosis. C. L. SHIELDS. Northwest Med., 1917, xvi, 364. [357]

Serum disease after intrathecal injections of serum. H. D. ROLLESTON. Lancet, Lond., 1917, cxciii, 821.

The biologic reaction in the diagnosis of cancer. J. DE K. PELLETAN. Rev. d. circ. med. argent. y cent. Estud. de med., 1917, xvii, 1231.

A note on serum sickness in cerebrospinal meningitis. C. B. KER. Lancet, Lond., 1917, cxciii, 822.

The mechanism and significance of the gum mastic test. S. L. IMMERMAN. J. Am. M. Ass., 1917, lxix, 2027.

The great assistance of agglutination tests in the diagnosis of enteric in anti-enteric inoculated individuals, with special reference to Dreyer's method, and also certain criticisms by Garrow. E. GLYNN. Lancet, Lond., 1917, cxciii, 946.

A review of some of the later developments along immunological lines. R. A. ARCHIBALD. Calif. St. J. Med., 1917, xv, 464. [357]

Blood

Primary progressive pernicious anæmia and aplastic anæmia; Addison's disease; congenital polycystic degeneration of the kidneys. D. SYMMERS. Interst. M. J., 1917, xxiv, 1103.

Treatment of pernicious anæmia, especially by transfusion and splenectomy. G. R. MINOT and R. I. LEE. Boston M. & S. J., 1917, clxxvii, 761. [357]

The treatment of secondary anæmia in infants by blood transfusion. C. G. KERLEY. Am. J. Dis. Child., 1917, xiv, 470.

A simple and rapid method for the selection of suitable donors for transfusion by the determination of blood groups. R. I. LEE. Brit. M. J., 1917, ii, 684.

Further observations on the results of blood transfusion in war surgery. L. B. ROBERTSON and C. G. WATSON. Brit. M. J., 1917, ii, 679. [358]

Transfusion of unmodified blood; an analysis of 165 cases. L. J. UNGER. J. Am. M. Ass., 1917, lxix, 2159.

The treatment of thrombosis. H. F. MARRIS. Brit. M. J., 1917, ii, 822.

A fragment of shell in the arterial circulation. C. S. O'NEILL. Brit. M. J., 1917, ii, 719.

Banti's disease. C. NORRIS, D. SYMMERS, and L. SHAPIRO. Am. J. M. Sc., 1917, cliv, 893.

Hæmolysins of vegetable origin. I. L. KRITCHEVSKY. J. Exp. Med., 1917, xxvi, 669. [359]

The broader aspects of hæmatological diagnosis. E. E. BUTTERFIELD and R. G. STILLMAN. Am. J. M. Sc., 1917, xliv, 783.

The treatment of secondary hæmorrhage from the buttock by ligature of the internal iliac artery. W. M. SHEPHERD. Brit. M. J., 1917, ii, 718.

Remarks on the treatment of cavernous and plexiform angioma. F. REDER. Illinois M. J., 1917, xxxii, 387.

Some new hæmostatics. L. STOLFA. Med. Rev. of Revs., 1917, xxiii, 806.

Blood and Lymph Vessels

Arteriovenous aneurism of the origin of the right popliteal vessels consecutive to a seton wound. TRUTIÉ DE VAUCRESSON. Arch. de méd. et pharm mil., Par., 1916, lxv, 729.

Treatment of a double femoral aneurism by proximal occlusion with an autoplastic fascial flap. E. G. JONES and C. E. WAITS. Surg., Gynec. & Obst., 1917, xxv, 689. [360]

Arteriovenous aneurism of the inferior popliteal triangle. T. DUCUING. Arch. de méd. et pharm. mil., Par., 1915, lxiv, 550.

Ligature of the right internal iliac artery for secondary hæmorrhage. R. L. SCOTT and A. R. MCLACHLAN. J. Roy. Army M. Corps, Lond., 1917, xxix, 592.

Poisons

Studies in wound infections. S. R. DOUGLAS, A. FLEMING, and L. COLEBROOK. Med. Bulletin, 1917, i, 92.

Identity of the toxins of different strains of bacillus welchii and factors influencing their production in vitro. C. G. BULL and I. W. PRITCHETT. J. Exp. Med., 1917, xxvi, 867.

Industrial poisoning in aircraft manufacture. A. HAMILTON. J. Am. M. Ass., 1917, lxix, 2037.

A clinical study of anaerobic wound infection. M. H. F. IVENS. Med. Bulletin, 1917, i, 89.

Venereal granuloma. A. H. ROFFO and J. T. ZARATE. Prensa méd. argent., Buenos Aires, 1917, iv, 283.

Note on the vaccination of guinea-pigs with bacillus perfringens. M. ROBERTSON. Med. Bulletin, 1917, i, 130.

The course of the tuberculous disease at different ages. J. RITTER. Illinois M. J., 1917, xxxii, 416.

The toxicity of neodiarsenol. E. P. ZEISLER. J. Am. M. Ass., 1917, lxix, 2181.

A modern view of tetanus. F. RANSOM. Lancet, Lond., 1917, cxciii, 928.

Notes on ten cases of tetanus. R. N. SALAMAN. Lancet, Lond., 1917, cxciii, 971.

The bacteriology of wound infection in cases of tetanus. W. J. TULLOCH. J. Roy. Army M. Corps, Lond., 1917, xxix, 631.

Recurrent tetanus of war wounds. G. VERNONI. Gazz. d. osp. e d. clin., Milano, 1917, xxxviii, 955.

Observations with antitetanus serum in the monkey. C. S. SHERRINGTON. Lancet, Lond., 1917, cxciii, 964.

An analysis of recent tetanus statistics. F. GOLLA. Lancet, Lond., 1917, cxciii, 966.

A case of splanchnic tetanus. H. BURROWS. Lancet, Lond., 1917, cxciii, 970.

Analysis of 102 consecutive cases of tetanus treated at Sir J. J. Hospital, Bombay, India, from October, 1915, to July 31, 1917. N. A. COOPER. Lancet, Lond., 1917, cxciii, 930.

Fifth analysis of cases of tetanus treated in home military hospitals during part of December, 1916, all January and February and part of March, 1917. D. BRUCE. Lancet, Lond., 1917, cxciii, 925.

Studies concerning gaseous gangrene. M. WEINBERG and P. SÉGUIN. Med. Bulletin, 1917, i, 95.

Factors responsible for gaseous gangrene. K. TAYLOR. Med. Bulletin, 1917, i, 85.

A form of gaseous gangrene; malignant gaseous œdema. M. SACQUÉPÉE and E. QUÉNU. Med. Bulletin, 1917, i, 83.

Gas gangrene; its course and treatment. K. TAYLOR. Med. Bulletin, 1917, i, 100.

Gas gangrene as seen at the casualty clearing station. C. S. WALLACE. Med. Bulletin, 1917, i, 106.

The color changes seen in the skin and muscle in gas gangrene. C. S. WALLACE. Med. Bulletin, 1917, i, 116.

Treatment of gaseous gangrene by the use of serum. M. WEINBERG. Med. Bulletin, 1917, i, 128.

The method of spread of gas gangrene into living muscle. J. W. MCNEE and J. S. DUNN. Med. Bulletin, 1917, i, 119.

A case of gangrene exhibiting unusual proofs of a blood infection. G. T. MULLALLY and J. W. MCNEE. Med. Bulletin, 1917, i, 103.

Metastatic gas gangrene. J. N. J. HARTLEY. Med. Bulletin, 1917, i, 104.

Radiographic aspects of gangrenous infections of war wounds and of gas gangrene in particular. G. LARDENNOIS and PECH. Med. Bulletin, 1917, i, 113.

The successful conservative treatment of early gas gangrene. C. H. S. FRANKAU, H. DRUMMOND, and G. E. NELLIGAN. Med. Bulletin, 1917, i, 125.

Hæmatoma and gaseous gangrene. M. HEITZ-BOYER. Med. Bulletin, 1917, i, 88.

Report of a case of gas gangrene associated with bacillus œdematiens. F. J. DALYELL. Med. Bulletin, 1917, i, 91.

Some factors in the pathology of gas gangrene. W. EMERY. Med. Bulletin, 1917, i, 105.

General pathology of acute bacillary gangrene. E. F. BASHFORD. Med. Bulletin, 1917, i, 110.

Experimental Surgery and Surgical Anatomy

Misplaced and missing organs. J. BLAND-SUTTON. Brit. M. J., 1917, ii, 607. **[360]**

Studies in bone regeneration. B. BROOKS. Ann. Surg., Phila., 1917, lxvi, 625. **[360]**

Wide exposure of the vascular trunks in the buttock region. J. FIOLLE and I. DELMAS. Presse méd., Par., 1917, p. 709.

Neurotization of paralyzed muscle by muscle grafting; a laboratory and clinical study. J. J. NUTT. J. Am. M. Ass., 1917, lxix, 2082. **[361]**

Roentgenology

Simplified X-ray methods. H. C. GAGE. Med. Bulletin, 1917, i, 45.

Use and misuse of the X-ray. C. E. SEARS. Internat. J. Orthodontia, 1917, iii, 732.

X-ray burn of the anal region. A. D. BEVAN. Surg. Clin. Chicago, 1917, i, 1240.

An address on the necessity for education in radiology and electrotherapeutics. G. H. ORTON. Brit. M. J., 1917, ii, 853.

The pre-operative reduction of epithelioma by roentgen rays or radium. D. W. MONTGOMERY and G. D. CULVER. J. Cutan. Dis., 1917, xxxv, 837. **[361]**

Morphologic appearance of cancer clinically cured by radium and roentgen rays. I. LEVIN and B. JOSEPH. J. Am. M. Ass., 1917, lxix, 1068. **[361]**

The roentgen ray in the diagnosis of gastro-intestinal disease. M. J. HUBENY. Interst. M. J., 1917, xxiv, 936. **[362]**

Roentgen rays from sources other than the focal spot in tubes of the pure electron discharge type. W. D. COOLIDGE and C. N. MOORE. Arch. Radiol. & Electrotherap., 1917, xxii, 216.

Some observations concerning the requirements of the radiographer and descriptive terminology. J. D. MCCOY. Internat. J. Orthodontia, 1917, iii, 729.

Localization of bullets and shrapnel balls by one radiograph in one plate. A. H. PIRIE. J. Roy. Army M. Corps, Lond., 1917, xxix, 580.

Choice of method of localization of projectiles at the front. DUHEIN. Rev. gén. de clin. et de thérap., Par., 1917, xxxi, 811.

A simple, rapid and accurate method for localization of foreign bodies. H. E. GAMLEN. J. Roy. Army. M. Corps, Lond., 1917, xxix, 210.

Technique of the immediate extraction of projectiles in the ambulance. J. FIOLLE. Presse méd., Par., 1917, p. 501.

A new apparatus for assisting the surgeon in finding foreign bodies localized by means of the X-rays. J. HALL-EDWARDS. Arch. Radiol. & Electrotherap., 1917, xxii, 211.

Hospital, Medicolegal, and Medical Education

The need of standardizing the statistics of child-caring institutions, foundling asylums, etc. S. W. WYNNE. Arch. Pediat., 1917, xxxiv, 939.

Childbirth and its ancient customs. J. H. MARCUS. N. Y. M. J., 1917, cvi, 1213.

The value of nurses hired by the city or district, "community nurses." B. HONEYWELL. J. Florida M. Ass., 1917, iv, 174.

Some beneficial results of school medical inspection. W. W. MCFARLAND. Penn. M. J., xxi, 184.

A uniform and generally applicable system for reporting surgical end-results. E. MACD. STANTON. J. Am. M. Ass., 1917, lxix, 2166.

A plea for the abolition of separate sections of medicine and surgery in the State Society. H. C. SMITH. Virg. M. Semi-Month., 1917, xxii, 431.

MILITARY SURGERY

General aspects of the war. T. H. GOODWIN. Mil. Surgeon, 1917, xli, 669.

The wounds of war. E. DELORME. Paris: Fournier, 1917.

Radiologic search for projectiles in the wounded. E. J. HIRTZ. Arch. de méd. et pharm. mil., Par., 1916, lxv, 499.

Notes on war surgery. A. AIMES. Progrès méd., Par., 1917, p. 444.

Surgical ambulances near the front line. H. BICHELONNE and E. MOURIQUAND. Arch. de méd. et pharm. mil., Par., 1916, lxv, 551.

Surgical service at the front. G. GATTI. Policlin., Roma, 1918, xxv, sez. prat., 32.

Advanced prompt surgical aid. V. MONTENOVESI. Policlin., Roma, xxiv, sez. prat., 1405.

Surgical treatment of wounded men at advanced units. H. M. W. GRAY. N. Y. M. J., 1917, cvi, 1013.

Functioning of the automobile surgical ambulance Number Twelve during the battle of V——. G. GROSS. Arch. de méd. et pharm. mil., Par., 1917, lxvi, 433.

Equinism due to gunshot injuries. LOHFAC. Arch. de méd. et pharm. mil., Par., 1917, lxvi, 812.

The treatment of infected wounds. D. SILVESTRINI. Policlin., Roma, 1917, xxiv, sez. prat., 1333.

Aseptic and physical means of treatment of war wounds in various stages. R. LERICHE. Med. Bulletin, 1917, i, 123.

The prophylactic dressing of wounds at the first aid stations. H. VINCENT. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 1612.

The microbian flora of war wounds. H. TISSIER. Arch. de méd. et pharm. mil., Par., 1917, lxvi, 782.

The treatment of nerve, muscle and joint injuries in soldiers by physical means. R. T. MCKENZIE. Canad. M. Ass. J., 1917, vii, 1057. [363]

Abortive treatment of infected wounds. UFFOLTZ. Arch. de méd. et pharm. mil., Par., 1916, lxv, 1. [364]

Present methods in military surgery. G. O. SHIREY. J. Arkansas M. Soc., 1917, xiv, 140. [364]

The microscopic examination of the brains of two men dead of commotic cerebri without visible external injury. F. W. MOTT. Brit. M. J., 1917, ii, 612. [364]

Explosive phenomena in gunshot injuries. S. G. SHATTOCK. Brit. M. J., 1917, ii, 795.

War and tuberculosis. E. S. MCSWEENEY. J. M. Soc. N. J., 1917, xiv, 457.

The diseases of war, their prevention, control, and treatment. L. L. SMITH. Calif. St. J. Med., 1917, xv, 487.

The application of military surgery to civil practice. W. E. LOWER. Ohio St. J. Med., 1917, xiii, 810.

War and the doctor. C. H. MAYO. N. Y. M. J., 1917, cvi, 1081.

Medical preparedness for national defense. F. F. SIMPSON. South. M. J., 1917, x, 951.

Medical problems of the war. L. R. WILLIAMS. N. Y. M. J., 1917, cvi, 1080.

Needs of the medical service. R. E. NOBLE. South. M. J., 1917, x, 922.

The proper organization of the medical profession of the national war, with moving pictures. W. O. OWEN. South. M. J., 1917, x, 926.

The surgeon general's office. C. H. MAYO. N. Y. M. J., 1917, cvi, 1083.

The library of the Army Medical Museum. R. W. SHUFELDT. Med. Rec., 1917, xcii, 1022.

Responsibilities of the medical profession in this war. V. C. VAUGHAN. Mil. Surgeon, 1917, xli, 651.

Medical service in the United States Army. C. H. MAYO. St. Paul M. J., 1917, xix, 351.

Medical needs and conditions of the National Army. C. A. E. CODMAN. Long Island M. J., 1917, xi, 461.

Medical needs and conditions of the National Army. H. D. JUMP. Long Island M. J., 1917, xi, 466.

The standard for exemption of tuberculous recruits from the national army. M. J. FINE. Med. Rec., 1917, xcii, 988.

What the American soldier now fighting in France should know about tuberculosis. S. A. KNOPF. West. M. Times, 1917, xxxvii, 225.

Installation in the army of genito-urinary, dermatologic, and syphilidographic services; their use and results. O. PASTEAU and E. MALLEIN. Arch. de méd. et pharm. mil., Par., 1917, lxvi, 818.

The navy and its health problems. C. H. MAYO. N. Y. M. J., 1917, cvi, 1082.

The American Red Cross. C. H. CONNOR. South. M. J., 1917, x, 948.

The relation of the surgeon to the American Red Cross. C. H. CONNOR. Internat. J. Surg., 1917, xxx, 372.

War work of American medical women. E. M. MOSHER. Chicago M. Recorder, 1917, xxxix, 543.

The world war; our duty in the present crisis. D. EVE. South. M. J., 1917, x, 911.

The work of the medical corps of the British Army. T. H. GOODWIN. Mississippi Valley M. J., 1917, xxiv, 382.

The French sanitary service. C. U. DERCLE. South. M. J., 1917, x, 917.

Postbellum medical problems; conservation of the race. J. H. MARCUS. N. Y. M. J., 1917, cvi, 1076.

GYNECOLOGY

Uterus

Cancer of the cervix at twenty-one. S. GRAVES. Mississippi Valley M. J., 1917, xxiv, 392.

Report of the treatment of carcinoma of the cervix at the Huntington Hospital for a period of four years. E. H. RISLEY and G. A. LELAND, JR. Boston M. & S. J., 1917, clxxvii, 891. [366]

Results of radium application in uterine cancer. ESQUERIDO. Therapia, Barcelona, 1917, ix, 681.

Hystero-carcinomectomy and the struggle against cancer. L. RAZETTI. Gac. méd. de Carácas, 1917, xxiv, 204.

Uterine fibroids; notes on their diagnosis, complications, and treatment based on the observation of 150 cases. W. D. MACFARLANE. Glasgow M. J., 1917, vi, 257. [366]

Uterine fibroids with reference to their tendency to become sarcomatous. F. WARNER. Am. J. Obst., N. Y., 1917, lxxvi, 888.

Fibroid uterus treated by X-rays. F. A. STONEY. Brit. M. J., 1917, ii, 723.

A case of pyometra. E. CHOME. Arch. mens. d'obst. et de gynéc., Par., 1917, v, 285. [367]

Non-operative treatment of suppurative peri-metro-adenixitis. D. VITAL-AZA. Rev. de med. y cirug. práct., Madrid, 1917, cxvii, 81.

Development and perfection of the interposition operation for prolapse of the uterus and bladder. I. S. STONE. Tr. South. Surg. Ass., St. Augustine, 1917, Dec. [367]

Prolapsus uteri and its treatment. A. J. RONGY. J. Am. M. Ass., 1917, lxix, 1862.

Operative treatment of uterine retroversion. VITAL-AZA. Bol. de la Rev. clin. de los hosp., Madrid, 1917, i, 7.

The treatment of leucorrhœa with lactic acid bacilli. F. B. BLOCK and T. H. LLEWELLYN. J. Am. M. Ass., 1917, lxix, 2025.

The preservation of the menstrual function in double suppurative disease of the tubes and chronic metritis. J. O. POLAK. J. Am. M. Ass., 1917, lxix, 1938.

Uterine rupture following anterior hysterotomy. R. R. KAHLE. J. Am. M. Ass., 1917, lxix, 2170.

The technique of total hysterectomy for non-malignant conditions. R. WORRALL. Am. J. Obst., N. Y., 1917, lxxvi, 894.

Total abdominal hysterectomy for irreducible complete inversion of the uterus due to a sessile based submucous fibroid; recovery. J. E. SUMMERS. Med. Herald, 1917, xxxvi, 265.

Adnexal and Periuterine Conditions

The left fallopian tube and intestinal stasis. D. H. STEWART. Am. J. Obst., N. Y., 1917, lxxvi, 943.

Unilateral defect of tube and ovary; a study in prenatal pathology. G. GELLHORN. Am. J. Obst., N. Y., 1917, lxxvi, 877.

Salpingitis. W. A. HUMPHREY. J. Am. Inst. Homœop., 1917, x, 685.

Unusually large hydrosalpinx; report of a case. L. E. PHANEUF. Boston M. & S. J., 1917, clxxvii, 879.

Treatment of vicious pelvis. F. LA TORRE. Clin. ostet., Roma, 1917, xix, 353.

External Genitalia

Vaginitis in infants. A. F. HESS. Med. Clin. N. Am., 1917, i, 713.

Obstetrical vesicovaginal fistula and ureterovaginal fistula; treatment by ureterocystostomy. A. BERTINO. Ann. di ostet. e ginec., Milano, 1917, xli, 41. [368]

Fibroid tumors of the vulva. V. N. LEONARD. Bull. Johns Hopkins Hosp., 1917, xxviii, 373. [368]

Intense vulvovaginal pruritis treated by resection of the perineal nerves. MAUCLAIRE. Ann. de gynéc. et d'obst., Par., 1917, lxxii, 655. [369]

Miscellaneous

Gynecological paper. W. P. GRAVES. Am. J. Orthop. Surg., 1917, xv, 807.

Some technical details of gynecological explorations. H. SOSNOWSKA. Presse méd., Par., 1917, p. 500.

Operative treatment of gynecological peritonitis. B. DE BENGOA. Siglo méd., Madrid, 1917, lxiv, 938.

Diathermy in gynecology. C. POBLACION. Rev. españ. de electrol. y radiol. méd., 1917, p. 152.

The germicidal value of the common gynecological douching agents. J. R. STARK. J. Lab. & Clin. Med., 1917, iii, 199.

Cystocele, uterine prolapse, retroflexion, and rectocele repaired by plastic operation upon the broad ligaments and vagina; fixation of the round ligaments and advancement of the anterior vaginal wall; perineorrhaphy. T. J. WATKINS. Surg. Clin. Chicago, 1917, i, 1021. [369]

Gonorrhœa in the female. E. F. ZIEGELMAN. Med. Sentinel, 1917, xxv, 3824.

OBSTETRICS

Pregnancy and Its Complications

Remarkable fecundity. P. E. REYNOLDS. Bull. Univ. Md. Schl. Med., 1917, ii, 159.

Diagnosis of pregnancy in the early months. L. ELIOT. Virg. M. Semi-Month, 1917, xxii, 444.

The diagnosis of the age of the fœtus by the use of roentgenograms. J. H. HESS. Am. J. Dis. Child., 1917, xiv, 397. [370]

The treatment of eclampsia. F. JUNG. Deutsche med. Wchnschr., 1917, xliii, No. 8. [370]

The eliminative treatment of eclampsia. L. E. PARMLEY. J. Florida M. Ass., 1917, iv, 172.

Some medical and surgical problems of prophylaxis in eclampsia. W. H. CONDIT. Illinois M. J., 1917, xxxii, 406.

The pathogenesis and treatment of eclampsia. FONTAN. Arch. de ginec., obst. y pediat., Barcelona, 1917, xxx, 277.

The symptoms, prophylaxis and treatment of toxæmia of pregnancy. J. A. G. HAMILTON. Med. J. Austral., 1917, ii, 431. [371]

The technique of cæsarean section. J. C. JEFFERSON. Practitioner, Lond., 1917, xcix, 562. [372]

The improved cæsarean section. A. L. SMITH. Practitioner, Lond., 1917, xcix, 541.

A case of cæsarean section complicated by rupture of the uterus. G. W. K. CROSLAND. Brit. M. J., 1917, ii, 790. [372]

Cæsarean section for eclampsia in twin pregnancy, saving mother and both children. A. SCHACHNER. Med. Rec., 1917, xcii, 941.

Abdominal cæsarean section for eclamspia; report of two cases. E. L. DORSETT. J. Missouri St. M. Ass., 1917, xiv, 512.

Abdominal cæsarean section and subtotal hysterectomy for strictured pelvis with eclampsia. J. A. MALDONADO. Crón. méd., Lima, 1917, xxxiv, 419.

Cæsarean section scars; a histologic study of four specimens. A. B. SPALDING. J. Am. M. Ass., 1917, lxix, 1847.

The treatment of septic abortion. W. E. DARNALL. Interst. M. J., 1917, xxiv, 1066. [372]

The diagnosis, treatment and management of surgical conditions complicating the process of generation. B. C. HIRST. Am. J. Obst., N. Y., 1917, lxxvi, 971.

A case of superfœtation. J. C. LOGAN. J. M. Ass. Ga., 1917, vii, 158. [373]

A case of superfœtation. DE LA MUELA. Rev. de med. y cirug. práct., Madrid, 1917, cxvii, 418.

Pregnancy with a dead fœtus. F. MAGALHAES. Brazil-med., 1917, xxxi, 368.

Albuminuria of pregnancy. H. M. SNEAD. Virg. M. Semi-Month., 1917, xxii, 450.

Pyelitis complicating pregnancy. H. A. MILLER. Penn. M. J., 1917, xxi, 145. [373]

Certain causes of bleeding during pregnancy; their significance and treatment. J. L. HUNTINGTON. Interst. M. J., 1917, xxiv, 1161.

Labor and Its Complications

Indications for antepartum symphyseotomy. G. FIEUX. Gaz. hebd. d. Sc. méd. de Bordeaux, 1917, xxxviii, 170.

Fœtal dystocia as an indication for operative delivery; the relative propriety of such procedures as they affect the interests of mother and infant. J. A. MCGLINN. Am. J. Obst., N. Y., 1917, lxxvi, 971.

Observations on painless childbirth; with notes on fifty consecutive cases treated by the hyoscine and morphine method. M. VIVIAN. Brit. M. J., 1917, ii, 760. [373]

Notes on painless childbirth. W. A. POTTS. Brit. M. J., 1917, ii, 758. [373]

Anæsthesia in gynecology and obstetrics. C. H. DAVIS. Surg. Clin. Chicago, 1917, i, 1253.

Twilight sleep in childbirth. J. H. FAIRBAIRN. Med. Press & Circ., 1917, civ, 470. [374]

Twilight sleep in childbirth. C. H. ROBERTS and T. G. STEVENS. Med. Press & Circ., 1917, civ, 471.

Eutocia attained by rational methods rather than by excessive narcosis during labor. W. E. WELZ. J. Mich. St. M. Soc., 1917, xvi, 501.

Indications in obstetric surgery. E. M. LAZARD. Am. J. Obst., N. Y., 1917, lxxvi, 909.

Puerperium and Its Complications

The treatment of infection following labor, mature and premature. P. B. BLAND. J. M. Soc. N. J., 1917, xiv, 453.

A new treatment for puerperal infection. MACAU. Bol. de la Rev. clin. de los hosp., Madrid, 1917, i, 8.

Postpartum hæmorrhage. H. THOMS. N. Y. M. J., 1917, cvi, 1069. [374]

Fulmination postpartum metrorrhagias. G. ARIAS. Siglo méd., Madrid, 1917, lxiv, 939.

Treatment of the hæmorrhage of inertia after the secundines. RIZZATTI. Policlin., Roma, xxiv, sez. prat., 1494.

The pulse in puerperal thrombophlebitis. R. Y. F. VELASCO. Clin. mod., Zaragoza, 1917, xvi, 672.

Five cases of vulvar lesions with puerperal infections. V. SOUTO. Brazil-med., 1917, xxxi, 405.

Clinical and medicolegal value of a non-described sign of recent puerperium. A. TURENNE and C. COLISTRO. Arch. mens. d'obst. et gynéc., Par., 1917, v, 350.

Miscellaneous

Conservation of maternal nursing. G. E. BAXTER. Illinois M. J., 1917, xxxii, 381.

Maternal and fœtal blood during pregnancy and the puerperium. W. D. FULLERTON. Am. J. Obst., N. Y., 1917, lxxvi, 918.

Diabetes with special reference to obstetrics. H. CALDWELL and R. H. L. BIBB. Texas St. J. Med., 1917, xiii, 274. [374]

Extra-uterine placental growth. A. J. MOONEY. J. M. Ass. Ga., 1917, vii, 155.

The average birth-weight in 2,000 confinements in the State of Maine. S. P. WARREN. Am. J. Obst., N. Y., 1917, lxxvi, 932.

Birth trauma. J. VAN D. YOUNG. Internat. J. Surg., 1917, xxx, 339. [375]

A case of melæna neonatorum treated by the injection of blood serum. A. ROSE. Brit. M. J., 1917, ii, 762.

Nitrous oxide in obstetrics. L. B. SPAKE. J. Kansas M. Soc., 1917, xvii, 326.

An obstetric résumé. F. T. VAN EMAN. J. Missouri M. Ass., 1917, xiv, 503.

Improvement of rural obstetrics with special reference to the midwife. G. F. KLUGH. J. So. Car. M. Ass., 1917, xiii, 765.

Obstetric fads and heresies. E. H. GRANDIN. Med. Rec., 1917, xcii, 980.

GENITO-URINARY SURGERY

Kidney and Ureter

Roentgenographic examinations of the urinary tract; review of a series of about 500 cases. E. W. CALDWELL. J. Am. M. Ass., 1917, lxix, 1487. [376]

The ratio between the urea content of the urine and of the blood after the administration of large quantities of urea. T. ADDIS. J. Urol., 1917, i, 263. [376]

Hæmaturia; clinical lectures. A. R. THOMPSON. Guy's Hosp. Gaz., 1917, xxxi, 450.

Nephrolithiasis. A. C. STRACHAUER. J.-Lancet, 1917, xxxvii, 807.

A clinical study of lithiasis based on a series of 198 cases. H. G. BUGBEE. J. Am. M. Ass., 1917, lxix, 1492. [377]

A new method for locating small calculi in the kidney at operation. J. E. BURNS. J. Urol., 1917, i, 559.

Calculus anuria in a solitary kidney. E. CASTANO. Rev. Asoc. méd. argent., Buenos Aires, 1917, xxvii, 423.

A reno-ureteral calculus. A. P. MARTIN. Siglo méd., Madrid, 1917, lxiv, 982.

The use of the opaque ureteral catheter to localize missiles in the kidney and ureter. A. FULLERTON. J. Roy. Army M. Corps, Lond., 1917, xxix, 51.

The comparative influence of morphine and total opium alkaloids on renal colic. D. I. MACHT. J. Urol., 1917, i, 201. [378]

Renal infection. J. F. GEISINGER. Am. J. M. Sc., 1917, cliv, 883.

Tuberculosis of the kidney; presentation of three cases. H. L. KRETSCHMER. Surg. Clin. Chicago, 1917, i, 1139.

Renal tuberculosis. A. E. MACKAY. Med. Sentinel, 1917, xxv, 3832.

Nephrectomy for tuberculosis in cases where ureteral catheterization is impossible. COMPAN. Med. Ibera, Madrid, 1917, i, 11.

Non-tuberculous hæmatogenous infection of the kidney. J. S. READ. Long Island M. J., 1917, xi, 457.

Pyelitis. R. K. REWALT. Penn. M. J., 1917, xxi, 148.

The nephrites of war. C. SIMON. J. de méd. et chir. prat., Par., 1917, lxxxviii, 925.

Suppurations of the urinary apparatus in infants; pyelites, pyelocystites and pyelonephrites. N. GURGEL. Arch. brasil. de med., 1917, vii, 495.

Experimental hydronephrosis; functional and anatomic changes in the kidney following partial ureteral obstruction. N. M. KEITH and D. S. PULFORD, JR. Arch. Int. Med., 1917, xx, 853.

Removal of an enormous kidney sarcoma by transmesocolic route. M. IZQUIERDO. Policlin., Seville, 1917, Nov. 15.

An interesting case of bilateral ureteral calculus. L. BUERGER. Med. Rec., 1917, xcii, 1020.

Obstruction of the ureter. J. F. GEISINGER. Ann. Surg., Phila., 1917, lxvi, 654. [378]

An interesting case of uretrotomy. L. RAZETTI. Gac. méd. de Carácas, 1917, xxiv, 203.

Bladder, Urethra, and Penis

Irritable bladder in women. G. W. STARK. N. Y. St. J. Med., 1917, xvii, 549.

Bladder disturbances due to nerve lesions. G. SMITH. J. Am. M. Ass., 1917, lxix, 1323.

Four cases of carcinoma of bladder locally removed by radium. B. S. BARRINGER. Am. J. Surg., 1917, xxxi, 325.

Tumors of the bladder. H. H. MORTON. Med. Times, 1917, xlv, 338.

Bladder tumors. J. U. REAVES. Med. Rec., 1917, xcii, 1115.

Tumors of the bladder. H. W. E. WALTHER. Ann. Surg., Phila., 1917, lxvi, 682. [378]

The treatment of bladder tumors. I. SANCHEZ-COVISA. Rev. clin. de los hosp., Madrid, 1917, ii, 46.

Stubborn cystitis. F. S. CARY. Surg. Clin. Chicago, 1917, i, 1261.

Vesical diverticulum; report of two cases, with remarks on operative technique. B. LEWIS and N. S. MOORE. J. Am. M. Ass., 1917, lxix, 1334. [379]

Exstrophy of the bladder and its treatment. C. H. MAYO. J. Am. M. Ass., 1917, lxix, 2079.

Extraction of a bullet lodged in the bladder by the natural route under control of the radioscopic screen. BEC and HADENGUE. J. de méd. de Par., 1917, xxxvi, 212. [379]

Urgent treatment of bladder and urethral wounds; treatment of kidney and ureter wounds at the front and at the base. Presse méd., Par., 1917, p. 706.

Autoplastic reconstruction of a large urethral loss of substance and of an extensive wound of the penis with partial destruction of the gland. R. LE FUR. Paris chirurg., 1917, lx, 358. [379]

The diagnosis and treatment of pathological conditions in the anterior urethra through the urethroscope. M. HUHNER. Med. Rec., 1917, xcii, 1057.

Prolapse of the female urethra. J. W. KEEFE. J. Am. M. Ass., 1917, lxix, 1935.

Genital Organs

Internal secretion of the testes. H. WHEELON. Interst. M. J., 1917, xxiv, 1089.

Tumor in an ectopic testicle. I. DE LA VILLA. Rev. clin. de los hosp., Madrid, 1917, ii, 41.

Syphilis of the testes. J. W. HANDLY. South. Pract., 1917, xxxix, 470.

Surgical treatment of seminal vesiculitis. A. B. CECIL. Calif. St. J. Med., 1917, xv, 497.

The verumontanum with special reference to the sinus pocularis; its anatomy, histology, and physiology. A. G. RYTINA. J. Urol., 1917, i, 231. [380]

The significance of prostatic infections. F. WIELAND. J. Am. Inst. Homœop., 1917, x, 682.

Two cases of foreign bodies in the prostate. POUSSON. Bull. et mém. Soc. de chir. de Par., 1917, xliii, 1996. [380]

Some remarks on the treatment of prostatic hypertrophy. R. CINAGLIA. Policlin., Roma, 1917, xxiv, sez. chir., 485.

Differential diagnosis of prostatic syphilis from cancer and other tumors. L. PORTILLO. Rev. de med. y cirug. práct., Madrid, 1917, cxvii, 386.

Demonstration and discussion of the technique of prostatectomy. L. E. SCHMIDT. Surg. Clin. Chicago, 1917, i, 1169.

Suprapubic prostatectomy. A. D. BEVAN. Surg. Clin. Chicago, 1917, i, 1245.

Prostatectomy. H. W. HOWARD. Med. Sentinel, 1917, xxv, 3837.

Prostatectomy. A. E. MACKAY. Med. Sentinel, 1917, xxv, 3839.

A study of the vesical orifice following perineal prostatectomy. E. M. WATSON. J. Urol., 1917, i, 543. [380]

Miscellaneous

The causes of urinary frequency in men. E. M. WATSON. N. Y. St. J. Med., 1917, xvii, 552.

The source of spirochætes in urine. A. T. NANKIVELL and C. E. SUNDELL. Lancet, Lond., 1917, cxciii, 836.

Prolonged catheterization. F. A. BRODRIBB. Brit. M. J., 1917, ii, 860.

Some new methods in the treatment of carcinoma of the lower genito-urinary tract with radium. H. H. YOUNG and W. A. FRONTZ. J. Urol., 1917, i, 505. [381]

Genito-urinary causes of low back pain. T. BAKER. Am. J. Orthop. Surg., 1917, xv, 819. [381]

Sexual infections in cantonments and camps; a follow-up system for their cure and control. J. B. CLARK. J. Am. M. Ass., 1917, lxix, 2182.

Reparatory surgery of the genito-urinary organs. J. DE SARD. Arch. de méd. et pharm. mil., Par., 1917, lxvii, 239. [382]

SURGERY OF THE EYE AND EAR

Eye

The ophthalmologist and the general practitioner. M. J. LEVITT. N. Y. M. J., 1917, cvi, 1078.

Care of the eyes. E. DAVIS. N. Y. M. J., 1917, cvi, 1208.

First aid in eye injuries. W. D. DONOHER. Northwest Med., 1917, xvi, 334. [383]

The removal of steel particles from the interior of the eye by the magnet. F. ALLPORT. Illinois M. J., 1917, xxxii, 395.

A note on cataract extraction. J. H. FISHER. Brit. J. Ophth., 1917, i, 749.

An extremely mild method for extracting cataract in toto. BARRAQUER and ANDUYNED. Clin. ophtal., Par., 1917, viii, 328.

Elliot's operation; complications and unfavorable results. W. G. M. BYERS. N. Y. St. J. Med., 1917, xvii, 545.

Clinical, anatomic, and bacteriologic researches on the lachrymal glands. CALDERADO. Ann. di ottal., Roma, 1917, xl, 35.

The more accurate determination of the position of foreign bodies in their relation to the eyeball and its component structures. E. M. EATON. Brit. J. Ophth., 1917, i, 721.

Salvarsan and other remedies in ophthalmic practice. F. FERGUS. Arch. Ophth., 1918, xlvii, 29.

Clinical course and the diagnosis of trachoma. M. H. FOSTER. J. Am. M. Ass., 1917, lxix, 1837.

Five years' experience with iridotasis. D. HARROWER. Arch. Ophth., 1917, xlvii, 37.

The recovery of fields of vision in concussion injuries of the occipital cortex. M. L. HINE. Brit. J. Ophth., 1918, ii, 12.

Disturbances of vision by cerebral lesions. G. HOLMES. Med. Press & Circ., 1917, civ, 490.

The importance of an eye-ground examination in infants after difficult delivery with or without the aid of instruments. J. A. KEARNEY. Am. J. Obst., N. Y., 1917, lxxvi, 904.

Sarcoma of the right optic nerve. G. MANSILLA. Siglo méd., Madrid, 1917, lxiv, 979.

Voluntary eversions of the upper lid. A. L. MCMILLAN. Brit. J. Ophth., 1918, ii, 26.

Care of the eyes of school children. S. H. MONSON. Ohio St. M. J., 1917, xiii, 813.

The etiology of squint. J. H. SIMPSON. Internat. J. Surg., 1917, xxx, 383.

The management of squint. R. VON DER HEYDT. Illinois M. J., 1917, xxxii, 404.

Relation of the eye, ear, nose, and throat to the conservation of the health of school children. S. F. SMITH. J. Florida M. Ass., 1917, iv, 167.

The interrelation of the diseases of the eye, the nose, and nasal accessory sinuses, with report of cases. E. C. SPITZE. Illinois M. J., 1917, xxxii, 399.

A note upon the pseudo-neoplastic form of interstitial keratitis. S. STEPHENSON. Brit J. Ophth., 1917, i, 754.

Effect of intestinal stasis on the eye, especially in iritis. H. M. THOMPSON. J. Ophth. & Oto-Laryngol., 1917, xi, 343.

Pink eye. O. R. WOLFE. J. Kansas M. Soc., 1917, xvii, 323.

Lessons from recurrent ocular inflammation and eye discomforts not relieved by refraction correction. H. WOODS. Bull. Univ. M. Sch!. Med., 1917, ii, 145.

Ear

Care of the ears. W. C. PHILLIPS. N. Y. M. J., 1917, cvi, 1159.

The auditory organs during the war. E. J. MOURE and P. PIETRI. Arch. de méd. et pharm. mil., Par., 1916, lxv, 809.

War deafnesses. P. MCBRIDE. Lancet, Lond., 1917, cxciii, 836.

Some observations on the Bárány tests as applied to aviators. H. L. BABCOCK. Boston M. & S. J., 1917, clxxvii, 840.

The complications of mastoiditis. J. M. SMITH. Med. Rec., 1917, xcii, 983.

Two interesting mastoid conditions. J. J. KING. Med. Times, 1917, xlv, 342.

Unusual case of pus in the neck in a case of mastoiditis. J. W. DURKEE. Laryngoscope, 1917, xxvii, 901.

The complete mastoid operation. H. B. BLACKWELL. Ann. Surg., Phila., 1917, lxvi, 640.

Acute otitis media in childhood. G. B. WOOD. Penn. M. J., 1917, xxi, 152.

Changing methods and advances in the treatment of progressive deafness from chronic secretory otitis media. F. P. EMERSON. Boston M. & S. J., 1917, clxxvii, 583. [384]

Chronic suppurative middle ear conditions. C. H. BEEBE. Hahneman. Month., 1917, lii, 747.

Suture without drainage in oto-laryngology. L. BECO. Rev. de laryngol., Par., 1917, xxxviii, 513.

Traumatisms of the auditory apparatus. H. ABRAND. Rev. de laryngol., Par., 1917, xxxviii, 433.

SURGERY OF THE NOSE, THROAT, AND MOUTH

Nose

Malignant papilloma of the nose and right maxillary sinus. G. FERRERI. Policlin., Roma, 1917, xxiv, sez. chir., 353. [385]

Fibroma of the ethmoid region. R. H. FOWLER. Laryngoscope, 1917, xxvii, 903.

Two cases of atrophic rhinitis treated with ichthyol ointment. R. H. FOWLER. Laryngoscope, 1917, xxvii, 904.

Deviation of the septum and submucous resection. H. M. GODDARD. N. Y. M. J., 1917, cvi, 398. [385]

The use of the turbinals and the septum in the repair of injuries and defects of the wall of the nasal cavity. G. S. HETT. Lancet, Lond., 1917, cxciii, 892.

A method of medicating eustachian bougies. L. M. HURD. Laryngoscope, 1917, xxvii, 879.

Nasal septum deformity in children. L. G. KAEMPFER. Laryngoscope, 1917, xxvii, 868. [386]

Disease of the nasal accessory sinuses. J. W. MURPHY. Ohio. St. M. J., 1917, xiii, 812.

Focal infections in the nose and throat; means of diagnosis and elimination. W. E. PATTERSON. J.-Lancet, 1917, xxxvii, 771.

Rib transplantation for correction of external nasal deformities; unusual experience in two cases. W. SCRUTON. Laryngoscope, 1917, xxvii, 899.

A case of nasal sarcoma cured by radium. O. J. STEIN. N. Y. M. J., 1917, cvi, 1075.

The fossa of Rosenmueller from the rhinological standpoint. S. YANKAUER. Laryngoscope, 1917, xxvii, 861.

Throat

Luetic paralysis of right vocal cord. G. E. DAVIS. Laryngoscope, 1917, xxvii, 896.

Diseased tonsils, their influence on health and technique of removal. L. H. LANIER. J. Arkansas M. Soc., 1917, xiv, 147.

Foci of infection in the tonsils. J. E. HETT. Canad. M. Ass. J., 1917, vii, 1094.

Absence of the right pinna and right tonsil, with right facial paralysis. J. J. HEALY. Brit. M. J., 1917, ii, 720.

A case of accessory tonsils. J. A. HAGEMANN. Laryngoscope, 1917, xxvii, 906.

The tonsil problem in children. L. K. GUGGENHEIM. Interst. M. J., 1917, xxiv, 1100.

Painless and bloodless tonsillectomy. W. W. FOWLER. Texas St. J. Med., 1917, xiii, 286.

Tonsilloscopy and curettage of the tonsils in adults. T. R. FRENCH. N. Y. M. J., 1917, cvi, 1061, 1115.

A plea for intelligent tonsillar surgery. C. H. LONG. J. Mich. St. M. Soc., 1917, xvi, 436.

The use of the hæmostat in tonsil operation. J. PRENN. Boston M. & S., J. 1917, clxxvii, 917.

A case of intrinsic cancer of the larynx; tracheothyrotomy; total laryngectomy. C. STERCKMANS. Arch. méd. belges, 1917, lxx, 605. [386]

Laryngeal stenosis as a complication of measles. M. F. MORRIS, JR. N. Y. M. J., 1917, cvi, 1125.

Intubation in laryngeal diphtheria; with notes on 64 cases. H. B. SHEFFIELD. Med. Rec., 1917, xcii, 1068.

Endolaryngeal removal of an unusually large lymphoangioma from the larynx; with complete recovery of the patient. C. W. RICHARDSON. Tr. Am. Laryngol. Ass., Atlantic City, 1917, May.

Stenosis of the nasopharynx; operation with prosthesis. H. E. ISAACS. Laryngoscope, 1917, xxvii, 885.

Mouth

Healing of lower jaw-bone defects in war cripples. J. F. S. ESSER. Am. J. Surg., 1917, xxxi, 305.

The treatment of gunshot wounds of the mandible and maxilla. W. K. FRY. Lancet, Lond., 1917, cxciii, 852.

Congenital paramedian sinuses of the lower lip. N. TOOMEY. Arch. Pediat., 1917, xxxiv, 924.

Two cases illustrating plastic and dental treatment. H. D. GILLES. Lancet, Lond., 1917, cxciii, 850.

The story of a tooth-plate, an unusual war injury. G. TAYLOR. Brit. M. J., 1917, ii, 720.

Treatment of carcinoma of the tongue with radium. F. G. DYAS. Surg. Clin. Chicago, 1917, i, 1301.